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Corporate disclosure, compliance and consequences: evidence from Russia

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ABSTRACT

Does the introduction of corporate transparency and disclosure rules in emerging economies affect compliance, and therefore earnings quality and firm performance? We explore these questions for an important emerging economy, Russia, using a natural experiment, the 2002 introduction of Russian corporate governance code. We exploit the exogenous variation in voluntary disclosure and find a significant increase in corporate disclosure among the domestic Russian firms over the period 2003–2007 when firms gradually adopted some but not all disclosure rules. The immediate effect of the introduction was a drop in reported earnings. Market valuation, however, only improved for domestic firms after 2007, when all domestic firms had complied. However, cross-listed firms, which were already satisfying international standards, remained largely unaffected. Though average compliance by domestic firms was only 53%, average firm value of treated domestic firms, relative to cross-listed ones, went up by about 10%. Results are robust, confirm external validity and offer important policy implications for other emerging/ transition economies.

1. Introduction

In a functioning market economy, financial disclosures represent an important governance mechanism for monitoring managers. Better disclosures reduce information asymmetries between investors and managers, thereby improving shareholders' ability to relate managerial decisions to firm performance (Lombardo and Pagano 2002). However, this conclusion is brought into question in emerging economies that are characterised by deficiencies in institutions as well as political connectedness (Khanna and Rivkin 2001; Faccio 2006). Moreover, governance reforms are also frequently difficult to introduce and ineffactually implemented in emerging economies (Krueger 1974; Morck, Wolfenzion, and Yeung 2005; Estrin et al. 2009a).[1] In this paper, we investigated whether changes in regulation intended to increase the quality of disclosure in emerging economies led to better compliance, and therefore, improvements in corporate performance.

Russia is a highly suitable place to explore this research question. It is a globally significant economy: a former superpower, with the largest oil reserves in Eurasia and the sixth largest economy in the world (using purchasing power parity). Furthermore, Russia offers a natural experiment to investigate this issue because it introduced new transparency and disclosure (T&D) rules in 2002 as part of the 2002 Corporate Governance (CG) Code. Prior to this, Russia did not have high governance reporting standards (Puffer and McCarthy 2003). The Russian case, although comparable to many emerging economies, contrasts with the widely studied case of the US, with long-established and high reporting standards (Gompers, Ishii, and Metrick 2003). This means that the gains from further changes in US CG are likely to be marginal. Indeed, Russia may represent a boundary condition for the

effectiveness of disclosure rule implementation in emerging markets, being one of the least promising jurisdictions in which to explore our research questions (Pistor 2019). Deep governance problems have been identified stemming back to the flawed privatizations of the 1990s (Boycko, Shleifer, and Vishny 1995; Enikolopov and Stepanov 2013), and there are close ties between oligarchs and the political elite (Lamberova and Sonin 2018; Aslund 2019; Commander 2019).

To explore our research question, we considered three interrelated aspects of the impact of new disclosure rules on compliance and firm performance in an emerging economy. These led to three hypotheses: (i) What induced the Russian firms to increasingly adopt the T&D rules? (ii) What was the impact of the introduction and adoption of the T&D rules? (iii) What explained the differential impact of increased disclosure between domestic and cross-listed Russian firms? These hypotheses were tested using the unique Standard and Poor (S&P) Russian survey data (2003–2007),[2] among others.

First, we considered compliance with the new T&D rules after 2002 and found it to be increasing, rising from 37% of firms in 2003 to 100% in 2007. On average, a median firm adopted approximately 53% of the required T&D rules. We documented how the evolution of compliance over 2003–2007 was influenced by peer behaviour among Russian listed firms.

Second, we exploited the exogenous variations in the timing of the *introduction* of new disclosure rules on performance and reported earnings quality measures to identify its causal effects after 2003 on domestic-listed firms relative to the control group of cross-listed firms. We used a difference-in-difference framework with/without firm fixed effects. We found that the *gradual adoption* of the T&D rules improved the earnings quality of domestic (treated) relative to cross-listed firms. Further, discretionary accruals fell, reducing operating performance. Increased disclosure, however, had no significant impact on the market valuations of domestic firms before 2007.[3]

Finally, we considered the impact of full compliance after 2007, when *all* firms had adopted the new T&D rules, even if only partially. We used data for 2000–2014 to analyse the effect of full compliance after 2007 on subsequent firm performance, again within a difference-in-difference model. We documented that the negative earnings effect of increased disclosure since 2003 disappeared after 2007, leading to a drop in processing costs and the cost of capital. Hence, firm values were increased via the positive effect on valuation multiples. We used a mediation analysis to explore the relationship between reported earnings share and firm value. While our sample contains all listed Russian firms on the S&P list, it is still relatively small, so we adjusted standard errors appropriately and tested the external validity of our results by considering *all* listed Russian firms from 2000 to 2017. Finally, we showed that, as expected, cross-listed Russian companies, which were already affiliated with foreign exchanges, were not impacted by the new T&D rules.[4]

The existing theoretical literature discusses both the costs (Morris and Shin 2002) and benefits (Shleifer and Vishny 1997) of increased corporate disclosure. In emerging economies like Russia, characterised by weak institutions (Aidis, Estrin, and Mickiewicz 2008), there is a strategic lack of transparency attributable to agency problems. Although public information is effective in influencing individual actions, danger arises if managers have their own private information that may induce them to overreact (Morris and Shin 2002). Likewise, heightened disclosure rules may adversely affect managerial incentives concerning project selection and risk-taking incentives (Goldstein and Sapra 2013), further adding to the costs of increased disclosure. Building on this literature, we separated the impact of the introduction of new T&D rules from the level of compliance. The latter may also indicate the processing costs of disclosure unless everyone is complying and disclosing (Blankespoor 2019). We concluded that in an emerging economy, the full potential of increased disclosure is realised only when everyone is complying.

The existing empirical literature about the effects of disclosure is largely based on US and Western European data. It predicts a positive impact of increased levels of disclosure on monitoring and a reduction in the cost of capital (Leuz and Verrecchia 2000; Berger and Hann 2003; Francis et al. 2004; Daske, Leuz, and Verdi 2008; Hope and Thomas 2008; Ogneva 2012). We depart from this literature in several ways. Ours is the first meticulous study of an important emerging economy to document the process of compliance and assess the impact of both the introduction of and compliance with the new T&D rules. Given the well-known problems of using cross-country regressions to assess policy impact (Temple 1999; Easterly 2005; Rodrik 2012), we supplemented existing knowledge with an in-depth study of disclosure policy implementation. We focused on a country with

unpromising jurisdiction. Specifically, it is argued that the 2002 Russian CG reform is different in nature from that of the International Financial Reporting Standards (IFRS) studied extensively in the financial literature (e.g. De George, Li, and Shivakumar 2016). The Russian reform was not mandatory but of a 'comply or explain' type, leading to staggered adoption. All the sample firms had adopted some but not all T&D rules by 2007, which reflects that non-compliance was costly in the credit-constrained Russian economy (Laeven 2001).

Moreover, most existing studies not only focused on developed economies but also assumed that firms always comply with the disclosure regulations. However, this is not necessarily appropriate in many emerging economies where new regulations are not always implemented effectively. This led us to distinguish between the introduction of the T&D rules and corporate compliance with the new rules. Using a difference-in-difference framework, we are the first to identify the causal impact of *both the introduction and the adoption of T&D rules*, allowing us to establish their different impacts.

Therefore, our results highlight the context-specific nature of the benefits of disclosure. Unlike in previous studies of developed economies (e.g. Daske, Leuz, and Verdi 2008; Lang, Lins, and Maffett 2012; Christensen Hans, Hail, and Leuz 2016), where new rules led to an immediate drop in reported earnings, we found that in Russia, firm valuations did not increase until widespread compliance was achieved, when all firms disclosed comparable information. This highlights the importance of distinguishing the effects of the introduction of the new rule from compliance in emerging economies.

This paper is organised as follows. Section 2 outlines the background and provides the theoretical framework as well as the empirical literature for hypotheses development. Section 3 presents the data and methodology for testing the hypotheses. Section 4 discusses the empirical findings and explores the possible mechanisms. The final section concludes the paper.

2. Background, theoretical structure and hypotheses development

2.1. Background

Initially, Russia might seem like an unlikely candidate for an analysis of CG in emerging markets. It is the largest republic of the former Soviet Union and was ruled by the Communist Party since 1917 until 1991. In that period, the country operated on socialist principles, with central planning, total state ownership of firms and suppression of all markets, including the capital market (Ellman 2014). The transition to capitalism since 1991 has been accompanied by the creation of oligarchic business groups around new owner–managers through a contentious and often corrupt privatisation process (Boycko, Shleifer, and Vishny 1995; Estrin et al. 2009a). However, Russia remains a highly relevant case for investigating the impact of changing T&D rules in emerging economies. Although no longer the world's second superpower, it is still one of the largest emerging economies and a major global supplier of natural resources. Moreover, while the governing elite has become entrenched in recent years, at the time of our study, Russia was still experimenting with market reforms (Shleifer and Treismann 2005). Indeed, this is why the country offers a natural experiment to explore how improved disclosure affects corporate performance. In the 1990s, Russia did not have high governance reporting standards (Estrin and Wright 1999; Puffer and McCarthy 2003). However, in 2002, the recently elected President Putin introduced new T&D rules, requiring firms to report annually on their compliance with the Code of 'Best' Transparency and Disclosure Practices (see Appendix 2 and Sprenger 2002).

Thus, Putin's presidency from 2000 started positively, as highlighted by President Bush, who praised President Putin's efforts to make Russia into a 'country in which democracy and freedom and the rule of law thrive' (US Department of State 2003, Series 108–154, p. 41). Shleifer and Treismann (2005) argued that while Russia's economic and political systems at that time were far from perfect, these deficiencies were typical of countries at its level of economic development. Similar ideas are found in Hoff and Stiglitz (2002, 8) who state that: 'between Russia and most other developed, capitalist societies there was a qualitative difference … [Russia was never a] … developed, capitalist society.' Thus, while institutions in Russia may not satisfy Western norms, they were relatively new and, taking this into account, their quality is not out of line with the standards of other emerging markets (Shleifer 2005).

Our study focuses on the impact of the 2002 Russian CG Code, introduced by Instruction No. 421/r dated 4 April 2002 of the Federal Commission on the Securities Market (FCSM), which was the Russian securities markets regulator at that time. This Instruction recommended that all Russian joint stock companies implement the Code's provisions. A further Regulation required listed companies to report the compliance of their practices with the Code or explain the reasons for non-compliance in their annual reports (the so-called 'comply or explain' approach). In 2003, the regulator issued guidelines for listed companies' reporting.

With the highly politicised privatisation processes in a country characterised by concentration of ownership – disproportionately in the hands of family-owned business groups (Guriev and Rachinsky 2005; Chernykh 2008; Estrin et al. 2009b) – it is not surprising that the FCSM encountered considerable resistance from many owners in implementing the new CG Code. Consequently, the FCSM, with presidential backing, took a proactive approach to its implementation (e.g. Belikov 2004).

In this paper, we first analysed the drivers of compliance with the Code. Second, using the 2002 CG Code, we were able to exploit the exogenous variation in voluntary disclosure to assess its impact on both earnings quality and performance (both accounting and market) measures among firms targeted by the Code, distinguishing between the impact of the introduction and compliance. Finally, we explored the effect of the Code on cross-listed firms that were not directly targeted.

2.2. Theoretical structure

A corporation can be viewed as a myriad of legal contracts designed to minimise contracting costs between different stakeholders (e.g. Coase 1937). Stakeholders demand quality information about the firm's ability to satisfy the terms of their own contract and its willingness and ability to comply with its contractual obligations. Financial disclosures and transparency provide a roadmap to each corporation that supports a wide range of contractual relationships; they also enhance the information environment generally by disciplining the unaudited disclosures of managers and by supplying input into the information processing activities of outsiders. The quality of financial disclosures can impact firms' cash flows directly, in addition to influencing the cost of capital at which the cash flows are discounted.

An absence of reliable and accessible information impedes the flow of human and financial capital towards sectors that are expected to have high returns and away from sectors with poor prospects (North 1991). In particular, better financial disclosure leads to superior CG and firm performance. Quality financial disclosures and transparency enhance efficiency by enabling managers and investors to identify value creation opportunities with less error and are a prerequisite to the existence of vibrant securities markets (Black 2000; Ball 2001). Effective stock markets in which stock prices reflect all public information and aggregate the private information of individual investors communicate that aggregate information to managers and current and potential investors (e.g. Goldstein and Guembel 2008). Dow and Gorton (2012) and Dye and Sridhar (2002) explicitly model a strategy-directing role for stock prices in which they impart private, decision-relevant information not already known by managers. Managers' investment decisions respond to this new information in price, and the market correctly anticipates managers' decision strategies in setting the price. Moreover, the financial disclosures of firms and their competitors aid managers and investors in identifying and evaluating investment opportunities. Patel, Balic, and Bwakira (2002) showed that firms with good financial T&D have lower costs of equity capital.

Financial T&D also supports the informational role played by the stock price. For example, Gompers, Ishii, and Metrick (2003) included financial T&D as components of CG rules and found that stronger rights in the US led to better corporate performance. Moreover, the level of corporate T&D is argued to directly affect outside investors' perceptions of the firm's governance standard (e.g. La Porta et al. 1997, 1998; Fields, Lys, and Vincent 2001; Becht, Bolton, and Roell 2003; Ali, Summa, and Trabelsi 2007; Bae, Tan, and Welker 2008). Hence, Shleifer and Vishny (1997) highlighted the beneficial influence of good CG laws on firm performance and value.

The identification of investment opportunities is necessary but not sufficient to ensure efficient allocation of resources. Given information asymmetry and potentially self-interested behaviour by managers, agency theories argue that pressures from external investors, as well as formal contracting arrangements, are needed to encourage managers to pursue value-maximising investment policies (e.g. Jensen 1986). Objective, verifiable

accounting information facilitates shareholder monitoring and the effective exercise of shareholder rights under existing securities laws. It enables directors to enhance shareholder value by advising, ratifying and policing managerial decisions and activities. It also supplies a rich array of contractible variables for determining the financial rewards for incentive plans designed to align executives' and investors' financial interests. The governance role of financial disclosures also contributes directly to economic performance by disciplining efficient management of assets (e.g. timely abandonment of losing projects), better project selection and reduced expropriation of investors' wealth by the managers. Financial disclosure can also lower the risk premium demanded by investors to compensate for the risk of loss from expropriation by opportunistic managers (Lombardo and Pagano 2000).

Another channel through which we expected financial T&D to enhance economic performance is by reducing adverse selection and liquidity risk. As documented in Amihud and Mendelson (2000), the liquidity of a company's securities impacts its cost of capital. A major component of liquidity is adverse selection costs, which are reflected in the bid-ask spread and market impact costs. Firms' pre-commitment to the timely disclosure of high-quality financial disclosures reduces investors' risk of loss from trading with more informed investors, thereby attracting more funds into the capital markets and lowering investors' liquidity risk (e.g. Douglas and Verrecchia 1991; Brennan and Tamarowski 2000; Leuz and Verrecchia 2000; Botosan 2005). Capital markets with low liquidity risk for individual investors can facilitate high-return, long-term (illiquid) corporate investments, including long-term investments in high-return technologies, without requiring individual investors to commit their resources over the long term (Levine 1997). Hence, well-developed, liquid capital markets are expected to enhance shareholders' value by facilitating corporate investments that are high-risk, high-return, long-term and more likely to lead to technological innovations. High-quality financial disclosure regimes provide important support for this capital market function.

However, some opaqueness could ultimately be to investors' advantage. For example, too much disclosure of pertinent information to outside investors can help rivals to respond more effectively to the firm's actions (Hermalin and Weisbach 2012). This can result in a loss of market share and reduced economic profit, leading to a decline in firm value. Thus, too much disclosure can potentially be detrimental for a firm. Obviously, the right level of disclosure is endogenous and will vary with the firm's own characteristics, the nature/competitiveness of the industry, etcetera. Thus, in a frictionless market, 'observed' levels of financial T&D are also the optimal financial T&D. Hence, any effort to forcefully increase/decrease the adopted level of financial T&D will reduce firm value. Moreover, even if we believe that transparency is generally to be promoted, that does not necessarily justify legally mandating greater transparency.

This theoretical framework – which explains the relationship between the quality of financial disclosure and firm performance in developed economies – needs to be extended to encompass the situation in emerging economies, where institutions are weak and norms of good governance are not yet established. In particular, we need to consider that the introduction of new rules does not necessarily imply that they will automatically be implemented, especially in areas where the privileges of majority owners were previously largely unconstrained. These problems are germane in the Russian context, where ownership structures were opaque and there was widespread expropriation of minority shareholders (Puffer and McCarthy 2003; Aslund 2019), the new T&D rules were initially voluntary and the owners might perceive disclosure as costly. In this situation, there will be considerable heterogeneity in firm compliance. Moreover, firms in emerging economies can choose between domestic and international (cross) listing. The latter requires considerably more disclosure, and therefore, will probably imply significantly better firm performance, although at a cost in terms of private benefits for dominant owners. Therefore, the relative performance in domestic and cross-listed firms needs to be considered as compliance with stricter T&D rules takes effect. These issues are the basis for our hypotheses outlined in the next subsection.

2.3. Hypotheses development

2.3.1. Hypothesis 1: compliance with disclosure rules

We have argued that the performance of publicly traded companies depends on the success of delegated monitoring, which in turn depends on the transparent flow of information to promote efficient

governance and supporting institutions (Jensen and Meckling 1976; Fama and Jensen 1983; Shleifer and Vishny 1997). However, a lack of T&D allows managers to indulge in corporate expropriation and entrenchment at the cost of minority investors. The enforcement of increased disclosure may be more difficult if there are agency problems (Morris and Shin 2002), especially in countries with weak institutions.

Previous studies (e.g. Patel and Dallas 2002; Gompers, Ishii, and Metrick 2003; Healy, Hutton, and Palepu 2010), including a few on Russia (Black 2001; Goetzmann, Spiegel, and Ukhov 2004; Black, Love, and Rachinsky 2006) and China (Firth, Wang, and Wong 2015), have considered the effect of firm-level disclosure and other CG measures on stock prices, market valuations and firm performance. Thus, Daske, Leuz, and Verdi (2008) found that the benefits of the IFRS on market liquidity and Tobin's Q were positive only when the legal enforcement of the IFRS was strong. Similarly, Christensen Hans, Hail, and Leuz (2016) found that improved compliance to changes in European Union securities regulation led to significant and stronger increases in market liquidity in countries that implemented the regulations more stringently. Hope and Thomas (2008) document that non-disclosing firms, relative to firms that continue to disclose geographic earnings, experience greater expansion of foreign sales, lower foreign profit margins and lower firm value in the post–SFAS (statement of financial accounting standards) 131 period. Michels (2016) found that investors may underreact to disclosed events if the processing costs of disclosed information are high, while De Franco, Kothari, and Verdi (2011) suggested that high processing costs could be a result of a lack of comparability of disclosed information. Firm-level disclosure indices are, however, potentially endogenous to firm performance measures as they are chosen by the firm's management, so natural experiments represent a more promising empirical strategy (Gow, Larker, and Weiss 2016; Leuz and Wysocki 2016).

In contrast, there is only limited literature on the diverse effects of increased disclosure in emerging economies. Liu, Yao, and Hu (2011) found beneficial effects of IFRS reporting on earnings quality and firm performance in China. However, Chen, Hung, and Wang (2018) suggested that mandatory corporate social responsibility disclosure in China had lowered firm profitability because of the costs of compliance, although we learned very little about the enforcement of these regulations, which is an important motivation for the present study. Countries that are part of the Anglo–American legal family (e.g. the US, Hong Kong and Canada) have come the closest to full compliance, while the Russian case appears to be closer to emerging economies like China, Indonesia, Korea, Brazil, Mexico, Argentina, Turkey, the Czech Republic and India (Vasiliyev 2000; Shleifer and Treismann 2005), where investors face problems of weak protection, insider-holding and ownership concentration.

When Russia introduced its new T&D rules in 2002, it simultaneously introduced mechanisms to raise the costs of non-compliance. The 1996 law, 'On Protection of the Rights and Legal Interests of Investors in the Securities Market', gave the FCSM the authority to impose penalties for violations in information disclosure and ban issuers who did not disclose the required information from public trading of securities (Sprenger 2000). The FCSM also used the threat of delisting in cases of non-disclosure (http://cbonds.ru/news/item/4012). Even so, the authorities faced considerable resistance to these changes, especially from oligarchic business groups that had highly non-transparent and complex ownership structures (Guriev and Rachinsky 2005; Estrin et al. 2009b).

Therefore, we proposed that the process of adoption/compliance in Russia is driven by peer effects and is, therefore, likely to be path dependent. This is because compliance generates a path-dependent virtual circle, in which, as more and more listed firms start disclosing and enjoying the benefits, in terms of greater market finance and higher market values, other peers follow suit. This led us to propose that the number of early adopters (the number of firms that adopted the T&D reform after its introduction) is an important determinant of the current level of adoption. The number of early adopters will depend on company views about the costs of non-compliance. The FCSM used the threat of delisting in cases of non-disclosure (http://cbonds.ru/news/item/4012), thus raising the cost of non-compliancy.[5] In an economy with significant constraints on bank lending (Laeven 2001), non-compliance also entails greater difficulty in securing external funding. Hence, we proposed:

Hypothesis 1. Early adopters of the 2002 T&D rules are likely to induce their peers to adopt the new rules over time.

2.3.2. Hypothesis 2: impact of increased disclosure on reported earnings and firm value

There is only limited previous literature about the impact of increased financial disclosure in Russia, namely, Black (2001), Black, Love, and Rachinsky (2006) and Goetzmann, Jonathan, and Ross (2003). Goetzmann, Jonathan, and Ross (2003) explored the drivers of the relative pricing of the common and preferred shares of Russian companies with a view to understanding Russian CG, especially poor legal protections for minority shareholders. If, as is normally assumed in equity valuation, the stream of future dividends represents all the benefits that can accrue to shareholders, the preferred should always sell for more than the common. However, this was not the case in their sample. They attributed this to a common factor potentially related to investor perceptions about CG but did not consider T&D rules.

Black (2001) and Black, Love, and Rachinsky (2006) considered the impact of the quality of CG on firms' market valuation. Black (2001) used a cross-section of 21 firms in 1999, and Black, Love, and Rachinsky (2006) used panel data over 1999–2004. Black (2001) examined the association between 1999 CG rankings and the calculated 'value ratio' of actual market capitalisation to potential Western market capitalisation, identifying a positive association. Black, Love, and Rachinsky (2006) established some significant correlations between CG indices and Tobin's Q using a pooled OLS estimator with fixed and random effects. While included fixed-effects estimates may account for some firm-level unobserved heterogeneity, there may still remain some firm-level time-varying unobserved heterogeneity biasing these estimates. Hence, these estimates can only be taken as correlations, not causal effects.

More recently, some studies have assessed the impact of CG on Tobin's Q and other outcomes in other emerging economies. In particular, Ntim, Opong, and Danbolt (2012) found that disclosing good CG practices had a greater positive effect on firm value than stakeholders among listed firms in South Africa. Using the same dataset, Ntim and Soobaroyen (2013) showed that, on average, better-governed corporations tended to pursue a more socially responsible agenda. Focusing on 12 Middle Eastern and North African countries over the period 2006–2013, Elamer et al. (2020) reported that the informativeness of risk disclosures on bank credit rating was higher in banks with a larger board size, greater independence, higher government ownership and better Shariah supervisory board, but it was lower in banks with greater block ownership, higher foreign ownership and the presence of CEO duality. However, although they use lagged explanatory variables and/or two-stage least square instrumental variable (IV) estimates, the IVs are not necessarily independent of the outcome variables. As such, these estimates are also likely to suffer from endogeneity bias.

We departed from this literature by using a natural experimental framework to document the process of compliance with the 2002 T&D rules over time, its drivers and its impact – distinguishing between introduction and compliance. We addressed potential endogeneity by exploiting the exogenous variation in T&D within a difference-in-difference framework. In doing so, we followed the approach of Daske, Leuz, and Verdi (2008) and Christensen Hans, Hail, and Leuz (2016).

First, we considered the impact of increased disclosure when compliance is complete. A key benefit of increased disclosures is that investors can make better informed investment decisions, thus enhancing their willingness to invest. This may lead to the choice of relatively riskier and longer duration projects and boost the return on investment (e.g. Gompers, Ishii, and Metrick 2003). However, too much disclosure of private information may also help competitors and thereby result in a loss of market share and profit (Hermalin and Weisbach 2012). Thus, the positive effects of increased T&D laws may be partially or fully offset by the costs of disclosure.

Moreover, in countries with weak institutions, such as Russia, there may be a lack of accounting transparency. In such cases, exogenously imposed regulatory changes requiring greater disclosure may produce adverse actions by managers, which could lead to a decrease in firm value. Although public information is effective in influencing individual actions, danger arises if managers have their own private information that may induce them to over-react, thus magnifying the effect of the noise (Morris and Shin 2002). Heightened disclosure rules may likewise adversely affect managerial incentives concerning project selection and risk-taking incentives (Goldstein and Sapra 2013). Thus, the benefits of such regulations may be outweighed by the costs generated by such adverse reactions.

Assuming that the costs of increased disclosure are not too prohibitive, we considered the potential impact of increased disclosure on reported earnings, earnings quality and firm value where firm value is defined

as:

$$\text{Value} = (\text{Price per share} * \text{Number of outstanding shares})$$

This can be rewritten as follows:

$$\text{Value} = \frac{\text{Price per share}}{\text{Earnings per share}} * \text{Earnings per share} * \text{Number of outstanding shares}$$

Accordingly,

$$\text{Value} = m * \text{Total earnings} \tag{1}$$

where

$$m = \frac{\text{Price per share}}{\text{Earnings per share}}$$

and

$$\text{Total earnings} = \text{Earnings per share} * \text{No of outstanding shares}$$

We labelled m as the 'valuation multiple'. Both the 'valuation multiple' and reported 'total earnings' in Equation (1) depend on the quality of firm T&D. Greater T&D is likely to boost the valuation multiple because investors will have greater trust about reported earnings and better CG practices lead to better utilisation of available resources, leading to higher firm valuation. This led to:

Hypothesis 2. So long as the costs of disclosure are not too high, increased disclosure will improve the quality of reported earnings.

2.3.3. Hypothesis 2a: impact of disclosure on firm valuation relative to reported earnings

However, the overall effect of greater T&D on total earnings also depends on what happened to earnings prior to the introduction of the T&D laws. For example, total earnings could increase if, prior to a mandated increase in corporate T&D, management was under-reporting corporate earnings (e.g. via discretionary accruals, thus reaping private benefits). Conversely, total earnings could decrease if management was previously over-reporting corporate earnings to raise their compensation and exploit lax tax enforcement. Alternatively, earnings could be unchanged if prior to a mandated increase in T&D, management was neither over-reporting nor under-reporting.

Before the enactment of the new T&D rules, we proposed that Russian operating performance measures were probably largely 'manufactured numbers', constructed at the discretion of managers. Russia modified its tax accounting from being 'high alignment' to 'low alignment' around 2001, which meant that financial accounting was no longer used to calculate taxable income, signalling a fundamental shift in reporting incentives (Goncharov and Zimmermann 2005). This is especially true for Russian domestic-listed firms, where the firm's financial statements were not used as the basis for corporate tax liabilities between 1998 and 2002. Schneider and Enste (2002) argued that Russia's shadow economy represented around 44% of GDP in 1998–1999, which primarily included legal activities like tax evasion. Thus, given weak shareholder disclosure requirements, managers of domestic-listed firms did not need to disclose accurate accounting information about firm operations in the pre-2003 years. However, cross-listed Russian firms, mainly listed on the London, Frankfurt and New York stock exchanges, faced more stringent disclosure rules and were already required to provide high-quality earnings information.

Further, for firms to receive the disclosure benefits or face penalties for non-disclosure or under-disclosure, market participants need to process the disclosed information. Information processing can be separated into 'information acquisition', or the task of finding/reading information, and 'information integration', or the task of assessing the informational implications and arriving at a valuation decision (Maines and McDaniel 2000). However, higher processing costs may prevent market participants from fully responding to disclosure or the lack of disclosure. De Franco, Kothari, and Verdi (2011) argued that comparability of disclosure information may lower the processing costs of information for investors. Similarly, Bradshaw, Miller, and Serafeim (2011) predicted that the use of atypical accounting methods is associated with larger analyst forecast errors and increased

forecast dispersion, consistent with variation in accounting procedures, thus raising the processing costs for external users. In other words, if processing costs are high, market participants will process less disclosure, and hence, have a more muted response to disclosure until processing costs start falling (Bloomfield 2002). However, processing costs are likely to be lower when all firms adopt increased disclosure. Accordingly, we proposed the following:

> *Hypothesis 2a. The effect of increased disclosure on firm valuation depends on the relative magnitude of its effects on reported earnings (positive or negative) and on valuation multiple (positive but could be lower in the presence of high processing costs), giving rise to the following cases:*
>
> *(i) If reported earnings drop and the drop in reported earnings is greater than the increase in valuation multiple after increased disclosure, the firm valuation will decrease.*
>
> *(ii) If the drop in reported earnings is exactly equal to the increase in valuation multiple after increased disclosure, the firm valuation will remain unchanged.*
>
> *(iii) If the increase in valuation multiple is greater than the drop in reported earnings after increased disclosure, firm valuation will increase.*

2.3.4. Hypothesis 3: impact of increased disclosure on cross-listed firms

Finally, we considered the impact of changes to T&D rules on the performance of cross-listed firms. Lang, Lins, and Miller (2003) showed that non-US firms cross-listed in the US tend to have better information environments and higher firm valuations than those that are not cross-listed. Further, the bonding hypothesis (Siegel 2005) predicts that managers will adhere to stricter regulatory regimes when firms are cross-listed. This holds since these firms face more rigorous outside regulations and enforcement of CG codes due to their cross-listing on foreign stock markets.

Following the 1998 Ruble crisis, a growing number of large Russian firms were cross-listed on foreign stock exchanges, mainly the London Stock Exchange or one of the major US stock exchanges. Firms from emerging markets (such as Russia) that traded on the London Stock Exchange used global depository receipts, which were introduced in 2001. Foreign firms listed in the US followed Rule 144A.[6] Further, the Sarbanes-Oxley Act or SOX, which required new or enhanced standards for all US public company boards, management and public accounting firms, was enacted in the US in 2002. As a result of SOX, the CEO and CFO are required to personally certify the accuracy of the firm's financial reports. Penalties for fraudulent financial activity were also substantially toughened. In addition, SOX increased the independence of outside auditors who reviewed the accuracy of corporate financial statements as well as the oversight role of boards of directors. Thus, in 2003, cross-listed firms already faced significant penalties for non-disclosure, which did not apply to firms that were domestically listed. Accordingly, we proposed:

> *Hypothesis 3: There will be no impact of increased disclosure in Russia on reported earnings and firm value for cross-listed firms.*

3. Research design

3.1. Data description

Our T&D disclosure data comes from the S&P's T&D surveys[7] 2003–2007 of 70 large listed Russian firms with the most liquid trades (see Standard and Poor's, 2003, 2004, 2005, 2006, 2007). These surveys focus on the adoption of various T&D rules since 2002 (see Appendix 2). They provide information on firm-level T&D in ownership structure, shareholder rights, financial and operating performance, and board and management structure. We then manually collected information from the S&P annual reports available for the 70 sample firms 2000–2007 and matched this with financial, accounting and ownership data available from the Bureau van Dijk's OSIRIS firm-level database. We also constructed an extended database of these S&P firms for 2000–2014 to assess the impact of the completion of the T&D reform in 2007, when all sample firms complied with the T&D rules, at least partially. To obtain information about the dates when Russian firms initially listed internationally, we relied on the initial public offering data from Price Waterhouse Coopers (2007). Finally, we collected data

for *all* Russian listed firms over 2000–2017 to assess if the baseline results obtained from the S&P sample were valid for all Russian listed firms as well.

We studied the listed companies included in the S&P survey. Under the Securities Law, the prospectus of a listed company must contain brief information about factors including shareholders, management, methods of finance, procedures for placement, business information and risks. Other information is discretionary, explaining the variation in total disclosure among our sample firms.

Listing on one of the Russian stock exchanges is viewed as a factor for improving financial accounting quality due to the disclosure and listing requirements and the use of either IFRS or US GAAP standards for financial reporting (Bagaeva 2010). In 2007, two-thirds of the sample companies used the IFRS or US GAAP method of accounting, and 78% of them had an international auditor. Approximately 15% of our sample firms had a foreign controlling owner and 20% were cross-listed. We only considered firms with complete market data available throughout the sample period 2000–2007.

S&P applied two criteria in selecting companies for inclusion in their database: size and liquidity.[8] Typically, the stock's liquidity is a positive function of company size, except in cases of minor free float (i.e. when only a small fraction of a firm's shares is publicly traded). The 70 companies included in our sample represent 80% of the cumulative market capitalisation of the Russian stock market in 2007. S&P's governance team processed the available information to code answers to various disclosure questions, as listed in Appendix 2, which are then aggregated to construct three T&D indices annually for each sample company, namely, T&D in financial and operational activities, T&D in ownership and T&D in board management. These three disclosure indices are highly correlated, indicating that a firm is likely to adopt different components of disclosure rules simultaneously. Accordingly, we used principal component analysis to generate a composite measure – TD_overall. Appendix Figure A1 shows the timeline of the introduction of the 2002 Russian CG Code.

The gradual enforcement of the overall T&D Code is summarised in Figure 1. By 2007, all the sample firms had adopted some rules. However, there was wide variation in the adoption of the content of the T&D rules by the sample companies. Regarding the composite T&D score, its mean was approximately 52%, the first quartile value was 41%, and the third quartile was 63%. The minimum and maximum were 6% and 85%, respectively. On average, approximately half of the sample firms complied with more than 50% of the required disclosure rules.

3.2. Model specification and tests of hypotheses

3.2.1. Test of Hypothesis 1

Hypothesis 1 focuses on the drivers of Russian firms' compliance with the 2002 T&D rules between 2003 and 2007. The outcome variable of our choice is a binary variable *TD_Dummy* that takes a value of 1 if a sample firm had adopted any of the T&D rules during 2003–2007 and 0 otherwise. We also considered the corresponding composite T&D score as an alternative.[9]

The *outcome variable* of interest pertains to an index of the adoption of new T&D rules. We used two alternative indices: first, we constructed a binary variable TD_Dummy indicating whether a sample firm has adopted the reform in year t, $t = 2003, \ldots, 2007$. Second, we considered a composite T&D adoption index TD_overall, comprising financial and operational disclosure, ownership and board management disclosure. Table 1 defines the key regression variables, their sample sizes and the descriptive statistics (means and standard deviations) in the baseline 2000–2007. It follows that the average value of TD_Dummy is 0.36 over 2000–2007, while that for TD_overall is 0.52. In other words, a sample firm had adopted approximately 52% of all T&D rules introduced in 2002.

We suggested that the process of adoption of new T&D rules by the context firm in a given year is likely to be driven by peer effects. Therefore, the *key explanatory variable* for testing Hypothesis 1 is the number of firms that adopted the reform in the last year (since 2003). We labelled this variable *NoEarlyAdopters*. The larger the number of early adopters in the last year, the greater the likelihood that the context firm would adopt the T&D rules in the current year. After the introduction of the 2002 reform, the identities of early adopters in the past year became public information, and it is surely beyond the influence of the context firm. As such, we took
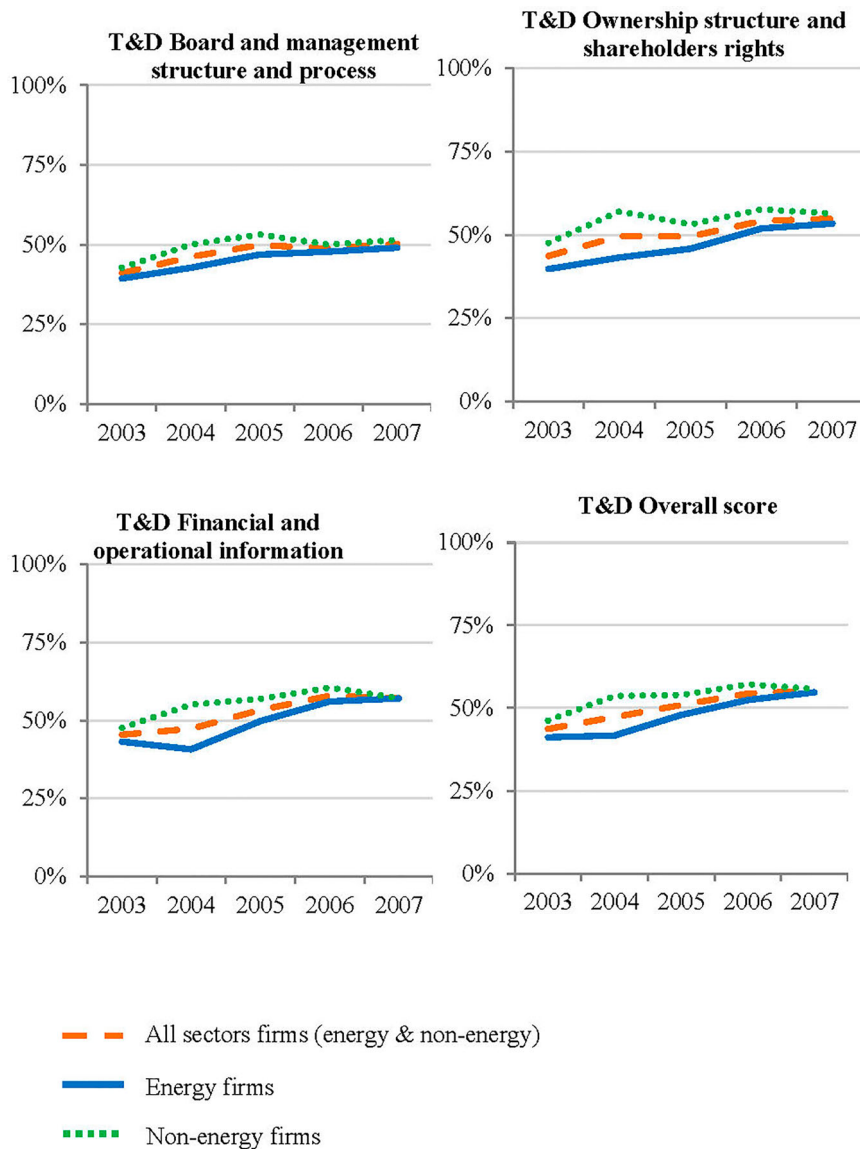
Figure 1. Trends in T&D indices, 2003–2007. The figure depicts four transparency & disclosure indexes (T&D) as provided by Standard & Poor year-to-year studies 2003–2007. T&D overall measures general implementation of CG code, T&D financial & operational information defines openness and availability of accounting data, employed standards, consistency with regulations, explanation and description of the firm and its market position, etc. T&D ownership demonstrates the data availability on the ownership structure. T&D board & shareholders shows the disclosure of the management structure. T&D measured in percentages with maximum 100% where higher score means better T&D within company.

NoEarlyAdopters to be exogenously given for the context firm in question and used it to determine its likelihood of compliance, ceteris paribus.

Following Berglof and Pajuste (2005), we also included the total liability ratio that accounts for the moral hazard problem in adopting increased disclosure. The estimated coefficient of liability ratio is likely to be negative because a firm's higher leverage would be public knowledge after the introduction of new T&D rules. As such, we expected that firms with a higher liability ratio would be less likely to disclose. One might also argue that firms with international bonds or borrowing from international syndicates are more likely to disclose. We tested the data at our disposal to investigate the impact of total liability on the likelihood of disclosure. Accordingly,

Table 1. Definitions and abbreviations of regression variables.

	Sample 2000–2007			(1)
VARIABLES	Obs	Mean	s.d	Variable definitions
Tobin's Q	64	1.60	1.29	Market capital plus debt as a share of total assets
EBIT_TA	70	0.13	0.10	Share of EBIT to total assets
Earnings Yield	61	0.22	0.77	Inverse of price-earnings ratio
Accrual quality	70	0.005	0.21	Earnings quality: (net income-cash flow)/total assets
Earning smoothness	68	2.01	1.98	Earnings quality: ratio of standard deviation of (net income/total assets) to standard deviation (cash flow/ total assets)
TD_overall	70	0.52	0.16	Composite transparency and disclosure index (continuous variable)
TD_Dummy	70	0.36	0.48	A binary variable that takes a value 1 if the T&D score is > 0 and 0 otherwise during 2003–2007
TD2003	70	0.63	0.48	A binary variable that takes a value 1 for years 2003–2007 and 0 otherwise
Domestic	70	0.81	0.39	A binary variable that takes a value 1 for Russian listed firms which are not cross-listed in a foreign market
Firm age	58	19.57	26.6	Firm's age in years since the date of incorporation
Log(total assets)	70	14.45	1.72	Log of total assets
Intangibility	70	4.4	13.3	Share of R&D expenditure in total fixed assets
Liability ratio	70	0.44	0.22	Share of total liability to total assets
Market to book	66	7.68	109.9	Market capital as a share of book value of equity
Controlling owner	70	0.29	0.46	A dummy variable taking a value 1 if a domestic ultimate owner (state or private) holds $> = 50\%$ ownership

The table shows the definitions and descriptive statistics of key regression variables in our sample. We consider two measures of firm performance, namely, Tobin's Q ratio is defined as (market capital plus book value of debt) as a share of total assets and earnings before interest and taxes (EBIT) as a share of total assets. Accrual quality is the ratio of operating accrual to total assets. Earnings smoothness is measured by the ratio of sd of EBIT/TA to sd of cash flow/TA. Earnings yield is the inverse of the price-earning ratio. The four T&D indices in the S&P survey refer to financial, ownership, board and management and a composite index obtained by using factor analysis. T&D scores are available only for 2003–2007. T&D dummy is the binary variable that takes a value 1 when T&D scores > 0 and 0 otherwise for 2000–2007. We also construct TD2003 to indicate the introduction of the T&D reform, which is a binary variable taking a value 1 if year $> = 2003$ and 0 otherwise. We also construct another dummy variable TD2007 to indicate years $> = 2007$ when all firms complied with the T&D rules, even if partly; it is zero otherwise (this variable is relevant when we consider the sample 2000–2014 or 2000–2017). All firms are domestically listed while only a subset of these listed firms is also listed internationally. We also show descriptive statistics for some of the additional explanatory variables including age of the firm (defined as the survey year- year of incorporation), firm size (measured by log of total assets), intangibility (which is the share of R&D in total fixed assets) and total liability ratio (as a share of total assets). We obtain discretionary accruals as a measure of earnings management. First, total accrual (defined as the difference between net income and cash flow from operations and activities) in year t as a share of lagged total assets is regressed on inverse of lagged total assets, change in revenue between year t and year t-1 as a share of lagged total assets and net value of property plant and equipment in year t as a share of lagged total assets. Taking assets as a denominator may eliminate the effect of size difference across firms. For each industry and year, we obtain the predicted value of the y variable which in turn yields the measure of non-discretionary accruals. We then subtract non-discretionary accruals from the total accruals to get the discretionary accruals. We consider three measures of earnings quality.

we estimated the following regression function:

$$Y_{it} = \alpha_0 + \alpha_1 \text{NoEarlyAdopters}_{t-1} + \alpha_2 \text{ Liability ratio} + \alpha' X_{it-1} + \text{Sector}_i + \tau_t + (\text{Sector}_i * \tau_t) + v_{it} \quad (2)$$

In Equation (2), Y is the outcome variable of interest pertaining to an index of adoption of new T&D rules, TD_Dummy or TD_overall.

X represents a set of other control variables, including firm size, age, R&D share, Herfindahl index (i.e. the share of firm sale to total industry sale) and Sector, Year as well as Sector*Year fixed effects. We measured market share/concentration using a Herfindahl index of public-listed firms. All X variables are lagged by one year, and standard errors are clustered at the firm level. Table 1 summarises the means and standard deviations of key regression variables.

3.2.2. Test of Hypotheses 2 and 2a

3.2.2.1. Outcome variables. To test Hypothesis 2, we used several measures of earnings quality. The first is accrual quality (e.g. Richardson 2003), defined as (Earnings–Cashflow)/(Average Assets); a higher accrual is associated with lower earnings quality. We also used earnings smoothness, defined as the ratio of standard deviation of net income divided by total assets to standard deviation of cash flow divided by total assets (Leuz, Nanda, and Wysocki 2003; Francis et al. 2004). A higher value of smoothness is associated with lower earnings quality.

Finally, we considered a measure of earnings persistence, which is the slope $\chi 1$ of the earnings yield in year t, where earnings yield is measured by inverse of price–earnings ratio with respect to its one-period lagged value (Ali and Zarowin 1992; Francis et al. 2004): Yield$_{i,t} = \chi 0 + \chi^1$ Yield$_{i,t-1} + \sigma_{i,t}$. A higher value of the slope $\chi 1$ indicates higher earnings quality. Table 1 summarises the means and standard deviations of these earnings quality measures.

To test Hypothesis 2a, we used two indices of firm performance: a market-based and an accounting-based one. For the former, we utilised Tobin's Q, defined as equity capitalisation plus the book value of debt divided by the book value of total assets.[10] For the latter, we used earnings before interest and taxes (EBIT) divided by the book value of total assets, which we labelled ROA. EBIT is amenable to earnings manipulation, while the numerator of the Tobin's Q measure is market determined; as such, differences in the estimates of Tobin's Q and ROA before and after the reform can identify accounting manipulation.

To identify the mechanisms through which Hypothesis 2a may operate, we needed to compare the effects of increased disclosure among treated firms on reported earnings (measured by EBIT share) as well as valuation multiple. Valuation multiple is measured by the price–earnings ratio. While an improvement in earnings quality after the introduction/adoption of the 2002 T&D rules may partly explain a change in earnings per share, we delved deeper to identify if increased disclosure after 2003 also gave rise to lower earnings management among the treated firms. We employed two measures of earnings management: the absolute value of discretionary accrual to proxy for accrual-based management and the abnormal level of cash flow as a measure of operations-based earnings management.[11] As shown in Table 1, the mean Tobin's Q is 1.6 and the EBIT share is 0.13 in this sample.

3.2.2.2. Methodology: a difference-in-difference model for the introduction of T&D rules.

We exploited the exogenous variation in disclosure after the 2002 T&D reform to assess its impact on selected outcomes within a difference-in-difference model. This model requires us to identify the treatment and control firms in our sample. By definition, treatment firms are those that were directly affected by the new T&D rules, while control firms are those unlikely to be affected.

We took domestic-listed Russian firms as our treatment group and cross-listed Russian firms as the control group. Using the S&P sample over 2003–2007 means that all the firms must have been listed by 2003, before the impacts of the T&D reforms were likely to have been realised. Only approximately one-fifth of the 70 Russian firms in our sample were internationally listed in 2003. We created a binary variable 'Domestic' that takes the value 1 if, by 2003, a sample firm is only listed domestically on a Russian stock exchange and 0 if listed internationally as well. Accordingly, cross-listed Russian firms are taken as the control group in our analysis, unlikely to be affected by the new T&D rules. The test of Hypothesis 3 below confirms that this was indeed the case in our sample.

The first year when the effect of the introduction of the reform would be reflected in a firm's financial statements is 2003. Accordingly, we constructed a binary indicator variable to capture the effect of the introduction/passage of Russian T&D law, which we call 'TD2003'. This dummy takes a value unity for the 2003–2007 period and zero otherwise. Although the T&D rules were adopted in a staggered manner, capital markets are likely to anticipate the reform and incorporate their expectations on valuations. This would especially be so for market-related outcome measures.

Accordingly, we estimated Equation (3) to determine the effect of the introduction of the T&D rules on selected outcome indicators Q of the *i-th* firm in year t as follows:

$$Q_{it} = \beta_{TD} \times TD2003 + \beta_D \times \text{Domestic}_i + \beta_{TDD} \times (\text{Domestic}_i * TD2003) + \beta_X X_{it-1}$$
$$+ \text{Sector}_i + \text{Sector}_i * \text{Year}_t + u_{it}, \tag{3}$$

where t = 2000, ... 2007.

The TD2003 dummy can be treated as exogenous because the sample firms are unlikely to have influenced the date of introduction of the T&D rules by the FCSM (the Russian security market regulator). We also ruled out the possibility of reverse causality in our sample period because Russian managers were first learning about the impact of disclosure. Ceteris paribus, the coefficient of interest to us is the estimated value of

β_{TDD}, which is the coefficient of the interaction term determining the differential effect of the introduction of the T&D rules on selected outcome measures Q among treated domestic-listed (relative to control) firms.

3.2.2.3. Difference-in-difference model for compliance with T&D rules.
Given that all sample firms had adopted some degree of disclosure by 2007, we also examined the effect of the adoption of the disclosure rules by 2007. Using the data for the sample firms over an extended period 2000–2014 (ensuring that we had about equal number of years before and after 2007), we constructed a dummy variable TD2007 that takes a value unity for the years 2007–2014 and zero otherwise. Accordingly, we can compare the treatment and control firms before and after the adoption of the new T&D rules by 2007. As before, we argued that the dummy TD2007 is likely to be orthogonal to the outcomes of interest of a particular firm, as an individual firm cannot influence when other firms choose to adopt the reform. Accordingly, we modified Equation (3) as follows:

$$Q_{it} = \gamma_{TD} \times TD2007 + \gamma_D \times \text{Domestic}_i + \gamma_{TDD} \times (\text{Domestic}_i * TD2007) + \gamma_X X_{it-1}$$
$$+ \text{Sector}_i + \text{Sector}_i * \text{Year}_t + u_{it}, \tag{4}$$

where $t = 2000, \ldots 2014$.

As before, the coefficient of interest is the estimate of γ_{TDD}, which accounts for the differential impact of the *adoption* (rather than that of the introduction as captured by β_{TDD} in Equation 3) of increased disclosure on domestic (relative to cross-listed) firms. Further, Russian managers were just learning about the impact of disclosure during our sample period; hence, they were unlikely to factor the costs of disclosure into their decisions. This limits the possibility of reverse causality. All X variables are lagged by one year, and standard errors are clustered at the firm level.

To test Hypothesis 2, we focused on the estimated coefficient of the interaction term in Equations (3) or (4) on measures of earnings quality, depending on whether we considered the impact of the introduction or the adoption of increased disclosure. To test Hypothesis 2a, our outcome variables pertain to measures of reported earnings and Tobin's Q. Note that the validity of Hypothesis 2a depends on the impact of increased disclosure after the introduction or adoption of new T&D rules on firm value (proxied by Tobin's Q) in relation to reported earnings using Equations (3) and (4), respectively.

To minimise omitted variable bias in both Equations (3) and (4), we controlled for several observable and some unobservable factors. The set of variables X includes firm size (measured by log of total assets), firm age (measured in years since the date of incorporation) and intangibility ratio (intangible fixed assets to total fixed assets), as is standard in the existing literature (e.g. Rajan and Zingales 1995; Booth et al. 2001; Franks and Mayer 2002; De Haas and Peeters 2006; Cole 2008; Driffield and Pal 2010). We also included sector dummies; these capture the effects of unobserved, time-invariant, sectoral factors – including prices, taxes and other exogenous shocks. Further, we included SectorXYear interaction dummies to control for industry-specific unobservable time trends (e.g. trends in oil price, re-nationalization of some sectors, changes in sector-specific tax regimes). We used robust standard errors clustered by firm IDs, which help to maintain the autocorrelation structure by keeping the observations for a given firm together over time.[12] All X variables are lagged by one year, and standard errors are clustered at the firm level.

Equations (3) and (4) use a pooled regression framework. We also estimated the corresponding models with firm fixed effects using the firm-level panel data at our disposal. This is because firm fixed effects help remove firm-specific time-invariant unobserved factors at the firm level, thus further aiding causal inferences.

An important identification assumption for the successful implementation of the difference-in-difference method is that the treatment and control groups of firms differ only due to the treatment (i.e. the introduction/adoption of new T&D rules). In this respect, the following conditions must hold: (i) the impact of time is constant across the treatment and control groups and (ii) the impact of the groups is constant across time. This is the parallel (or common) trends condition. Satisfaction of the parallel trends between treatment and control groups in the pre-reform years would ensure the consistency of β_{TDD} and γ_{TDD} estimates in Equations (3) and (4), respectively. We followed McCrary (2008) by using a regression framework to test if the parallel trends assumption holds in our sample (see Appendix Table A1 and further discussion in Section 4).

3.2.3. Test of Hypothesis 3

Hypothesis 3 pertains to the effect of disclosure on the performance indices of cross-listed firms. As such, we assessed if the cross-listed firms in our sample experienced any change in performance after the 2003 introduction of the new T&D rules. In doing so, we regressed the selected performance indices, namely, EBIT share and Tobin's Q on TD2003 and other control variables (e.g. log (total assets), share of intangible assets, sector dummies and SectorxYear dummies) for the subsample of cross-listed firms. Note that TD2003 is a binary variable that takes a value of 1 if year $> = 2003$ and 0 otherwise. Ceteris paribus, the test of Hypothesis 3 depends on the estimated coefficient of TD2003 for the subsample of cross-listed firms. The statistical insignificance of TD2003 would support Hypothesis 3 that the performance of cross-listed firms remains unaffected by the introduction of the new T&D rules in 2003.

One explanation of Hypothesis 3 is that Russian firms that have cross-listed in foreign exchanges prior to 2003 are more likely to start disclosing earlier than domestic-listed firms following the 2002 reform; this is because they were already disclosing comparable information as part of being listed abroad. Accordingly, we also tested whether the cross-listed Russian firms were more likely to be disclosing for longer. To this end, we regressed the number of years since a firm adopted the 2002 T&D rules on log (total assets), share of intangible assets, sector dummies and SectorxYear dummies and also a binary variable indicating whether cross-listed using the full sample of firms. A statistically significant and positive estimated coefficient of the cross-listed dummy would indicate a positive association between the cross-listed firms and the likelihood of disclosing for longer in our 2000–2007 sample.

4. Empirical findings

4.1. Hypothesis 1

Hypothesis 1 argues that early adopters of the 2002 T&D rules are more likely to induce their peers to comply with the new rules over time, as per Equation (2). We used ordinary least squares (OLS) estimates of the likelihood of a firm's adoption of new disclosure rules in Table 2. Column 1 shows the estimates of the composite T&D index TD_overall, while Column 2 displays those for the corresponding binary TD_Dummy variable over the sample period 2000–2007.

Both sets of estimates highlight the positive role played by the number of adopters in the last year, controlling for all other factors that may also influence adoption of the T&D rules. The larger the number of firms that adopted the reforms in the previous year, the greater the likelihood of the context firm adopting T&D in the current year, thus supporting Hypothesis 1.

Among other results, the estimated coefficient of the total liability ratio was negative. In other words, firms with greater (lower) liability are less (more) likely to disclose, presumably because having more liability would make it difficult for the context firm to raise market finance. Additionally, larger firms and firms with greater market share were more likely to comply with increased disclosure rules.

Taken together, peer effects, among others, played a significant role in inducing gradual compliance with increased disclosure rules among all sample firms. We argued that the latter highlights that non-compliance was costly for Russian firms. Poor lending policy in a country with weak CG meant limited access to bank finance for many Russian firms (Laeven 2001), thus inducing them to comply with new disclosure rules in a bid to secure more market finance.

4.2. Hypothesis 2: effect of disclosure on earnings quality measures

4.2.1. Earnings persistence

Earnings that are more persistent are more sustainable and of higher quality (Francis et al. 2004). Table 3 reports the effects of past earnings yield on current earnings yield in the post-reform years 2003–2007. Column 1 does not control for other factors influencing yield, but Column 2 controls for the factors influencing earnings in Equation (3), while Column 3 also includes the Sector*Year dummies. Since the estimated coefficient of past

Table 2. Drivers of firms' compliance with 2002 T&D rules.

	(1)	(2)
VARIABLES	TD_overall	TD_Dummy
No of early adopters	0.0043***	0.0065***
	(0.001)	(0.002)
Total liability ratio	−0.1800**	−0.448***
	(0.076)	(0.145)
Ln(total assets)	0.0399***	0.0802***
	(0.014)	(0.027)
Intangibility	−0.0003	−0.0022
	(0.001)	(0.002)
Herfindahl	0.0578***	0.0497*
	(0.018)	(0.026)
Domestic	−0.0518	−0.0125
	(0.065)	(0.089)
Constant	−0.1606	−0.3105
	(0.180)	(0.369)
Industry dummies	Yes	Yes
Year dummies	Yes	Yes
Observations	264	264
R-squared	0.318	0.302

This table shows the estimates of composite T&D scores TD_overall and the associated binary variable TD_Dummy for the baseline sample 2000–2007. In addition to various firm characteristics like firm size, age, R&D share of total fixed assets as a measure of intangibility and Herfindahl index (firm sale as a share of industry sale), the identifying variables are number of early adopters and liability ratio. Number of early adopters is the lagged value of the number of firms that adopted the new T&D rules in a year. Liability ratio is simply total liability divided by total assets. All right-hand side variables are lagged by one year. The TD-Dummy takes the value 1 if the firm has positive composite T&D score and takes the value 0 otherwise. It is thus an index of adoption of the 2002 T&D rules introduced as part of the Russian Corporate Governance Code in a year. We use cluster-robust (at the firm level) standard errors in parentheses; $***p < 0.01, **p < 0.05, *p < 0.1$.

earnings yield is positive and highly significant in all three columns, our estimates support the view that earning yields have been persistent in the post-2003 years.

Next, we used two additional earnings quality measures to test whether earnings quality had improved among treated domestic-listed firms after the introduction of the T&D reform since 2003. As discussed earlier, these are accrual quality and earnings smoothness. For each, we ran separate difference-in-difference models as per Equation (3) (see Table 4).[13] The coefficient of interest is that of the interaction term Domestic∗TD2003, which indicates the differential impact of the 2003 introduction of the T&D rules among treated domestic (relative to cross-listed) firms.

Columns 1 and 2 show the estimates of accrual quality and earnings smoothness for the 2000–2007 sample, focusing on pre-/post-introduction scenarios. Columns 3 and 4 show the corresponding estimates for the extended sample 2000–2014 in order to analyse the pre-/post-compliance scenarios (after 2007).

4.2.2. Pre-introduction scenario

The estimated coefficient of the domestic dummy is positive and statistically significant in both columns 1 and 2. In other words, these estimates indicate that the treated domestic-listed (relative to cross-listed) firms displayed significantly higher accrual quality and earnings smoothness in the pre-2003 years. Since higher values of accruals and smoothness indicate lower earnings quality, we inferred that earnings quality was significantly lower among treated domestic (relative to cross-listed) firms in the pre-2003 years.

The corresponding estimates shown in columns 3 and 4 describe the pre-2007 compliance scenario before all firms complied with the new T&D rules introduced in 2003. As before, the estimated coefficient of the domestic dummy is positive for both variables, but statistically significant only for the earnings smoothness measure, thus

Table 3. Persistence of earnings quality in the post-reform years 2003–2007.

	1. Earnings yield	2. Earnings yield	3. Earnings yield
Lagged earning yield	0.9966∗∗∗	0.9984∗∗∗	0.9985∗∗∗
	(299.53)	(285.17)	(283.46)
Intercept	0.0009	0.0436∗∗∗	0.0473
	(0.25)	(2.69)	(1.10)
Other controls	No	Yes	Yes
Year dummy	Yes	Yes	Yes
Sector dummy	Yes	Yes	Yes
SectorXYear	No	No	Yes
R^2	0.99	0.99	0.99
Firms	59	59	59
N	221	212	212

The table tests for the persistence of the estimates of earnings yield (which is the inverse of the price-earnings ratio) in the post-reform years. Earnings which are more persistent are more sustainable and are of high quality (Francis et al. 2004). A significantly higher value of the estimated coefficient of lagged earnings yield therefore indicates higher earnings quality in the post reform years. Other controls are log(total assets) and intangibility. We cluster standard errors for each company. T-statistics are shown in parentheses: $* p < 0.1; ** p < 0.05; *** p < 0.01$.

indicating some improvement in earnings quality among domestic-listed firms in the pre-2007 years (relative to the pre-2003 years).

4.2.3. Post-introduction scenario

However, the situation changed after the introduction of the T&D reform in 2003. Note that the TD2003 dummy is positive but remains statistically insignificant, as is the estimated coefficient of Domestic∗TD2003 dummy in the determination of accrual quality (Column 1 of Table 4). In other words, quality disclosure did not change accrual quality among treated domestic-listed firms significantly after the 2003 introduction of the CG Code. In contrast, the estimated coefficient of Domestic∗TD2003 interaction term turned out to be negative and statistically significant for determining earnings smoothness (see Column 2 of Table 4) in our sample. The latter is indicative of better earnings quality among treated domestic-listed firms after the introduction of the reform in 2003. Taken together, there is some evidence of an improvement in the earnings quality of treated domestic-listed firms after 2003.

4.2.4. Post-compliance scenario

Subsequently, we considered the impact of the adoption of increased disclosure rules, using estimates of Equation (4) over 2000–2014, as shown in columns 3 and 4 of Table 4. As with the post-introduction scenario, we focused on the estimated coefficient of the interaction terms Domestic∗TD2007. The estimate of accrual quality was negative, but statistically insignificant as before (see Column 3 of Table 4). In other words, there is no evidence of any significant change in this respect among domestic-listed firms after 2007. With respect to the earnings smoothness measure, however, we note that the estimated coefficient of Domestic∗TD2007 is negative and statistically significant. In other words, there is evidence of a significant improvement in earnings quality (as measured by earnings smoothness) among domestic (relative to cross-listed) firms after 2007.

4.2.5. Firm fixed-effects estimates of earnings quality

So far, we have considered pooled cross-section time-series data with Sector and SectorXYear dummies to account for sector-specific time-invariant and time-varying unobserved factors in Table 4. Given that firm-level unobserved factors may remain, we argue that firm fixed-effects estimates are better than our baseline OLS estimates shown in Table 5. Naturally, the domestic dummy drops out of this regression because it is time-invariant. However, the estimated interaction coefficient yields very similar results, and these hold for both samples, 2000–2007 (pre-/post-introduction) and 2000–2014 (pre-/post-compliance).

Table 4. Effect of T&D introduction and adoption on earnings quality.

	2000–2007		2000–2014	
	Accrual quality	Earnings smoothness	Accrual quality	Earnings smoothness
Domestic	0.1526∗∗∗	1.0502∗∗∗	6.9418	3.1973∗∗
	(2.96)	(3.76)	(1.42)	(2.24)
TD2003	0.0877	0.8095		
	(1.35)	(1.12)		
DomesticXTD2003	−0.0608	−0.7433∗		
	(0.93)	(1.83)		
TD2007			5.0477	−0.5559
			(1.02)	(0.15)
DomesticXTD2007			−7.5262	−6.3955∗∗
			(1.33)	(2.00)
Log(assets)	−0.0637∗∗∗	−0.2397∗∗∗	1.1727∗∗∗	4.5070∗∗∗
	(3.86)	(3.98)	(3.07)	(3.37)
Firm age	−0.0003	0.0022	0.0130∗	0.1213∗∗∗
	(0.72)	(0.59)	(1.71)	(3.08)
Intangibility	0.0100∗∗∗	0.0495∗∗∗	−0.1121∗∗	−0.1835
	(3.18)	(2.94)	(2.14)	(1.21)
Intercept	0.6194∗∗∗	4.1372∗∗∗	−28.6802∗∗∗	−48.8444∗∗∗
	(2.82)	(5.18)	(2.88)	(2.62)
Sector dummies	Yes	Yes	Yes	Yes
SectorXYear dummies	Yes	Yes	Yes	Yes
R^2	0.25	0.10	0.17	0.20
Firms/clusters	58	57	54	54
N	334	334	484	484

Columns (1)–(2) show the difference-in-difference model (D-in-D) estimates of two earnings quality measures each for 2000–2007 sample while columns (3)–(4) show those for the 2000–2014 sample. Each specification in columns (1)–(2) includes the dummy for the domestic-listed Russian firms ('Domestic'), dummy for the T&D reform introduction in 2003 (TD2003) and also their interactions. The TD2003 takes the value 1 for year $>=2003$ and takes the value 0 otherwise. Specifications in columns (3)–(4) replace TD2003 by TD2007 to indicate the adoption of T&D rules by 2007 (see Section 3). TD2007 $= 1$ if year $>=2007$ and 0 otherwise. While columns (1)–(2) reflect the effects of introduction of the T&D rules, those in columns (3)–(4) show the corresponding effects when all firms have adopted the rules by 2007. First, we measure accrual quality (a la Richardson (2003)) as follows: Accrual Quality $=$ (Earnings- Cashflow)/Average Assets and infer that higher accrual is associated with lower earnings quality. Second, we measure earnings smoothness as ratio of standard deviation of (net income/total assets) to standard deviation of (cash flow/total assets) (Leuz, Nanda, and Wysocki 2003; Francis et al. 2004). A higher value of smoothness is associated with lower earnings quality. For each chosen measure of earnings quality, we run a difference-in-difference model. All control variables are lagged by one year. We cluster standard errors for each company. T-statistics are shown in parentheses; $* p < 0.1$; $** p < 0.05$; $*** p < 0.01$.

These firm fixed-effects estimates of earnings quality confirm our baseline estimates: treated firms had significantly lower earnings smoothness for both post-introduction and post-compliance years. The corresponding coefficient for accrual quality, however, remains statistically insignificant as before.

4.2.6. An explanation

While an improvement in earnings quality can partly explain a fall in earnings per share (see further discussion below), we explore further to identify if increased disclosure after 2003 also gave rise to lower earnings management among the treated firms. Since accrual-based earnings management is more likely to be detected after the introduction of the T&D reform, it is possible that discretionary accruals would decline after the introduction of the reform. Nevertheless, firms may continue to undertake some kind of operation-based earnings management after the reform. We followed Cohen, Dey and Lys (2008) by calculating discretionary accruals. First, total accrual (defined as the difference between net income and cash flow from operations and activities) in year t as a share of lagged total assets is regressed on the inverse of lagged total assets, change in revenue between year t and year t-1 as a share of lagged total assets, and net value of property plant and equipment in year t as a share of lagged total assets. Taking assets as a denominator helps to control for the effect of size difference across firms. For each industry and year, we obtained the predicted value of the y variable, which in turn yielded

Table 5. Firm fixed effects estimates of earnings quality.

Firm FE	2000–2007		2000–2014	
	Accrual Q	Earnings smoothness	Accrual Q	Earnings smoothness
TD2003	0.1223**	−1.6248		
	(2.26)	(0.75)		
DomesticXTD03	1.0196	−0.1015*		
	(0.38)	(1.89)		
TD2007			5.4520	0.00001***
			(1.02)	(2.81)
DomesticXTD07			−5.1278	−0.00002**
			(0.96)	(2.48)
Intercept	0.2520	25.2153	−4.1989	0.2055***
	(1.52)	(1.09)	(0.72)	(12.4092)
Other controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
R^2	0.05	0.32	0.86	0.99
Number of firms	57	51	63	63
N	386	228	474	608

Columns (1)–(2) show the difference-in-difference model (D-in-D) estimates of two earnings quality measures each for 2000–2007 sample while columns (3)–(4) show those for the 2000–2014 sample; both estimates include firm fixed effects. Each specification in columns (1)–(2) includes the dummy for the domestic-listed Russian firms ('Domestic'), dummy for the T&D reform introduction in 2003 (TD2003) and also their interactions. The TD2003 takes the value 1 for year $>= 2003$ and takes the value 0 otherwise. Specifications in columns (3)–(4) replace TD2003 by TD2007 to indicate the adoption of T&D rules by 2007 (see Section 3). TD2007 $= 1$ if year $>= 2007$ and 0 otherwise. While columns (1)–(2) reflect the effects of introduction of the T&D rules, those in columns (3)–(4) show the corresponding effects when all firms have adopted the rules by 2007. First, we measure accrual quality (a la Richardson (2003)) as follows: Accrual Quality = (Earnings- Cashflow)/ Average Assets and infer that higher accrual is associated with lower earnings quality. Second, we measure earnings smoothness as ratio of standard deviation of (net income/total assets) to standard deviation of (cash flow/total assets) (Leuz, Nanda, and Wysocki 2003; Francis et al. 2004). A higher value of smoothness is associated with lower earnings quality. For each chosen measure of earnings quality, we run a difference-in-difference model. Other controls are as in Table 4, which are all lagged by one year. T-statistics are shown in parentheses; $* p < 0.1; ** p < 0.05; *** p < 0.01$.

the measure of non-discretionary accruals. We then subtracted non-discretionary accruals from the total accruals to obtain the discretionary accruals. Given that there is a large number of missing values for the property, plant and equipment values in our sample, we could obtain the estimates for discretionary accruals for a subset of firms. We used the available information to obtain the Epanechnikov kernel fit (see Appendix Figure A2) of the absolute value of discretionary accrual as a proxy for accrual-based management against year (specifically over 2000–2007). Subject to the data limitation, there is indeed some confirmation from Figure A2 that the absolute value of the discretionary accruals gradually declined among treated domestic-listed firms in the post-2003 years over 2003–2007. Thus, we concluded that earnings quality improved as discretionary accruals fell over 2003–2007 among treated domestic-listed firms in our sample, as these firms started disclosing quality information, thus supporting the validity of Hypothesis 2 in our sample.

4.3. Hypothesis 2a: effect of disclosure on firm performance

To test the validity of Hypothesis 2a, we considered the impact of introduction (as per Equation 3) as well as adoption by 2007 (as per Equation 4) of the 2002 T&D rules on selected firm performance indices.[14]

4.3.1. Pre-introduction scenario
We first considered the D-in-D estimates of Tobin's Q and EBIT shares as per Equation (3); the baseline estimates are summarised in Table 6.[15] Columns 1 and 2 show the estimates for 2000–2007, focusing on the pre- and post-introduction scenario.

The estimated coefficient of the domestic dummy is positive and significant in the EBIT equation and positive but insignificant in determining Tobin's Q. In other words, domestic-listed Russian firms (relative to the

Table 6. Effect of introduction and adoption of disclosure rules on firm performance.

	1. Tobin's Q	2. EBIT share	3. Tobin's Q	4. EBIT share
Domestic	−2.6552	0.0526*	−1.7053***	0.0324
	(1.32)	(1.72)	(2.80)	(0.73)
TD2003	−2.2161	0.0529*		
	(0.93)	(1.81)		
DomesticX TD2003	1.8363	−0.0576**		
	(0.85)	(2.02)		
TD2007			−3.3651***	−0.0905*
			(5.66)	(1.83)
DomesticxTD2007			2.0833***	−0.0421
			(3.61)	(0.89)
Log(total assets)	−0.2685**	0.0099	−0.1710*	0.0124*
	(2.38)	(1.47)	(1.72)	(1.74)
Intangibility	0.0025	−0.0006	−0.0035	−0.0005
	(0.25)	(1.10)	(0.46)	(0.78)
Intercept	8.7532***	−0.0653	10.0928**	−0.1402
	(3.31)	(0.70)	(2.22)	(1.40)
Sector dummy	Yes	Yes	Yes	Yes
SectorXYear	Yes	Yes	Yes	Yes
R^2	0.16	0.09	0.34	0.13
Firms	66	66	70	70
N	349	349	436	436
Means of Y (sd)	1.93	0.13	1.93	0.13
	(2.04)	(0.097)	(2.04)	(0.097)

This table summarises the D-in-D estimates of firm performance. Tobin's Q and EBIT/Assets are the dependent variables as proxies for operating performance and firm valuation. Specification in columns (1)–(2) includes the dummy for the domestic-listed Russian firms ('Domestic'), dummy for the T&D reform introduction in 2003 (TD2003) and also their interactions considering the sample period 2000–2007. Specification in columns (3)–(4) includes the dummy for the domestic-listed Russian firms ('Domestic'), dummy for the T&D reform adoption in 2007 (TD2007) and also their interactions considering the sample period 2000–2014. The variable 'Domestic' is a dummy variable – takes the value 1 if the firm is listed only in Russian exchanges and it takes 0 if the firm is listed in both Russian exchange and one/many foreign exchanges (cross-listed). The TD2003 takes the value 1 for year > = 2003 and takes the value 0 otherwise. TD2007 is a binary variable that takes a value 1 if year > = 2007 (when all sample firms adopted the reform as per S&P survey). All control variables are lagged by one year. We use cluster-robust standard errors at the firm level and show t-statistics in parentheses: $*p < 0.1$; $**p < 0.05$; $***p < 0.01$.

cross-listed ones) had significantly higher EBIT/Assets ratios in the *pre-introduction* years, holding other factors constant, thus indicating evidence of earnings inflation in the pre-reform years, which is compatible with the earnings quality estimates discussed earlier.[16]

4.3.2. Post-introduction scenario

Next, we considered the estimate of the interaction coefficient TreatedxTD2003 in columns 1 and 2. Ceteris paribus, the estimated interaction coefficient is negative and statistically significant for the EBIT share equation (see Column 2), highlighting a significant negative effect of the 2002 introduction of the T&D rules on EBIT/Assets among treated domestic-listed firms relative to cross-listed ones. The EBIT/Assets share fell among the treated domestic-listed firms increasingly after 2003, because the EBIT share was previously inflated, as documented above.[17] In contrast, for Tobin's Q (see Column 1), the estimated coefficient of the interaction term Domestic × TD2003 was positive but remained statistically insignificant. The latter is consistent with Hypothesis 2a (ii) that the effect of increased disclosure on earnings balanced that on the valuation multiple (see further discussion below), so that the firm valuation did not improve after 2002.

The obvious question is *why treated firms did not realise increased valuation as and when they started increasing disclosure*. Following on from our discussion in Section 2, we considered the possibility of high processing costs of disclosed information among market participants, which may prevent them from fully responding to

disclosure or the lack of disclosure (e.g. De Franco, Kothari, and Verdi 2011). One possible reason for high processing costs is the lack of comparability of disclosed information among domestic-listed Russian firms soon after 2003, which may induce market participants to process less disclosed information. The S&P survey data at our disposal show (see Figure 1) that starting from 2003, firms started disclosing increasingly more information (pertaining to financial, ownership and board management) until 2007. Additionally, an increasing number of firms started disclosing, so that by 2007, all sample firms began disclosing some information. The latter may explain the slow response of market participants/investors in the years immediately after the 2002 introduction of new T&D rules. With costly information processing, market participants tend to have a muted response to disclosure, so that the increase in firm valuation was enough to outweigh the reported drop in earnings after the introduction of the 2002T&D rules in our 2000–2007 sample. The latter implies a muted effect on firm valuation, thus confirming the validity of Hypothesis 2a (ii).

Appendix 1 Table A4 further establishes the robustness of the baseline estimates. Columns 1 and 2 show the estimates for the bottom 50% of sample firms by assets, which are smaller in size. In columns 3 and 4, we drop the domestic firms that were listed abroad after 2003. In columns 5 and 6, we show the estimates, after controlling for firms listed on the London, New York and Frankfurt stock exchanges. Evidently, these estimates are very similar to what we observed in Table 6.

4.3.3. Post-adoption scenario

We now consider the effects of adoption after 2007 on performance measures. To do so, we utilise the extended sample over 2000–2014 and estimate Equation (4).[18]

Columns 3 and 4 of Table 6 show the performance estimates after dropping the financial crisis years 2008–2009 that created volatility in the market. The coefficient estimate of TreatedxTD2007 in Column 4 confirms that treated domestic-listed firms did not experience any significant drop in EBIT share after 2007 in this extended sample. More interestingly, we found a positive and statistically significant coefficient on the interaction term Treated∗TD2007 for Tobin's Q in Column 3, indicating that the treated domestic-listed (relative to cross-listed) firms had experienced a significantly higher firm valuation after 2007.

The average value of Tobin's Q for the treated firms in 2006 was 1.90 in our sample, and the marginal benefit for increased disclosure was 2.08 from 2007 onwards, indicating a gain of approximately 9.5%. Firm valuation, therefore, increased significantly among the treated domestic firms only after 2007, when all firms complied with the T&D reform and market participants found it easier to process comparable disclosed information.

4.3.4. Firm fixed-effects estimates of performance indices

We also considered the corresponding firm fixed-effects estimates of performance indices (see Table 7) within a difference-in-difference framework as before – these remain our preferred estimates because they account for the firm-level time-invariant unobserved heterogeneity.

Naturally, the domestic dummy drops in this regression because it is time-invariant. However, the estimated interaction coefficient yields very similar effects to the pooled regression results shown in Table 6 using both 2000–2007 and 2000–2014 data. (i) Ceteris paribus, the treatment effect is negative and significant for EBIT (Column 2) after the introduction of the reform, but positive and statistically insignificant for Tobin's Q (Column 1). (ii) Controlling for all other relevant firm characteristics, the treatment effect is insignificant for EBIT (Column 4), but positive and statistically significant for Tobin's Q (Column 3) after the 2007 adoption of the reform in the extended sample 2000–2014. Taken together, increased disclosure after 2007 led to an increase in firm valuation among treated firms, but no further effect on EBIT share after 2007. Overall, a significant increase in firm value among treated domestic-listed (relative to cross-listed) firms in the D-in-D model with firm FE lends stronger confirmation to Hypothesis 2a (iii) after all firms complied with the new T&D rules.

4.3.5. An explanation

These post-adoption/compliance results highlight that the increase in valuation multiple after 2007 dominated the decrease in earnings share, so that the total effect of increased disclosure became positive after 2007. The latter can be attributed to two factors: (a) the introduction of disclosure in 2003 had gradually lowered the earnings inflation of pre-2003 years, so that the drop in earnings share was muted after 2007. (b) The processing

Table 7. Firm fixed effects estimates of firm performance.

	2000–2007		2000–2014	
	Tobin's Q	EBIT share	Tobin's Q	EBIT share
TD2003	−2.4747	0.0649∗∗		
	(1.00)	(2.40)		
DomesticXTD2003	2.5323	−0.0484∗		
	(1.03)	(1.72)		
TD2007			−2.5872∗∗∗	−0.0555∗∗
			(4.49)	(2.11)
DomesticXTD2007			2.6313∗∗∗	0.0229
			(4.26)	(0.87)
Intercept	5.2753∗∗∗	0.1560	9.9222∗∗∗	0.0884
	(3.07)	(1.45)	(3.72)	(0.67)
Other controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
R^2	0.05	0.03	0.14	0.03
N	349	386	458	648

This table summarises the D-in-D estimates of firm performance with firm fixed effects. Tobin's Q and EBIT/Assets are the dependent variables as proxies for operating performance and firm valuation. Specification in columns (1)–(2) includes the dummy for the domestic-listed Russian firms ('Domestic'), dummy for the T&D reform introduction in 2003 (TD2003) and also their interactions considering the sample period 2000–2007. Specification in columns (3)–(4) includes the dummy for the domestic-listed Russian firms ('Domestic'), dummy for the T&D reform adoption in 2007 (TD2007) and also their interactions considering the sample period 2000–2014. The variable 'Domestic' is a dummy variable – takes the value 1 if the firm is listed only in Russian exchanges and it takes 0 if the firm is listed in both Russian exchange and one/many foreign exchanges (cross-listed). The TD2003 takes the value 1 for year $>=2003$ and takes the value 0 otherwise. TD2007 is a binary variable that takes a value 1 if year $>=2007$ (when all sample firms adopted the reform as per S&P survey). All control variables are lagged by one year. We use cluster-robust standard errors at the firm level and show t-statistics in parentheses: $*p < 0.1; **p < 0.05; ***p < 0.01$.

costs of disclosed information gradually fell as all firms started disclosing comparable information after 2007, thus facilitating more positive responses from market participants. Thus, by virtue of Equation (1), valuation multiple (m) increased while earnings share remained unchanged, so that firm value went up significantly among treated firms. This is consistent with Hypothesis 2a (iii) after all firms started complying (see further discussion in Section 4.5).

4.3.6. Role of controlling owners

The 1990s privatisation process gave rise to concentration of ownership to insiders in Russian corporations (Estrin et al. 2009a) and led to the emergence of widespread oligarchic business groups (Sprenger 2002; Guriev and Rachinsky 2005). Moreover, as of 2007, the federal and regional governments controlled approximately 40% of the stock market capitalisation in Russia, especially in the energy resource sectors.[19] In this section, we explore whether the performance estimates hold after considering the presence, if any, of a controlling owner.

Terterov (2006) argued that not only the state-controlled firms but also private companies in Russia serve at the pleasure of President Putin, particularly if they operate in the oil or energy sectors, resulting in very weak minority investor protection in a country with weak law enforcement (e.g. Goetzmann, Spiegel, and Ukhov 2004). This situation did not change perceptibly after the 2002 reform (Reznik 2015).[20]

We used the global ultimate ownership data from OSIRIS to identify the presence of ultimate controlling shareholders in our sample firms. Our S&P sample contains 11 large state-owned firms, where the state holds at least a 51% stake – including Gazprom, Gazpromneft, Mossenergo, Roseneft, Aeroflot, Sberbank, VIMPEL communications, VTB bank and VSMPO-Avisma. As such, the government acts as the controlling owner in these firms. Private firms can also have controlling owners, who may be politically connected (Terterov 2006; Reznik 2015; Aslund 2019),[21] and these owners can create similar governance problems to those in state-owned controlled firms at the expense of minority shareholders. In our sample, only six private firms were identified as having controlling owners. The sample is too small to allow for separate regressions for firms with and without

controlling owners. Accordingly, we re-estimated the performance Equations (3) and (4), including a dummy variable indicating if the firm has a controlling owner with 51% or greater ownership share.

State and private firms are significantly different regarding controlling ownership; 25% of private as opposed to 44% of state firms are known to have controlling owners. However, we did not find significant differences in disclosure likelihood between state and private firms. If at all, state firms seem to be disclosing more information than their private counterparts: the average composite disclosure index is 0.55 for state firms compared to 0.50 for private firms. Further, state firms have significantly higher disclosure of financial and operational information (0.57 as opposed to 0.51 for private firms). Concerning disclosure in ownership or board management, we did not, however, find any significant difference between state and private firms in our sample.

Appendix 1 Table A5 shows the firm performance regressions for both 2000–2007 (columns 1 and 2) and 2000–2014 (columns 3 and 4) samples after including the controlling owner as an additional argument. Evidently, the results are rather similar to those in Table 6: the introduction of the T&D reform had lowered EBIT share but had no significant impact on firm valuation among domestic-listed firms after 2003. However, treated firms experienced a significant increase in firm valuation, as the negative earnings effect gradually diminished after increased disclosure by all firms after 2007. This holds even after controlling for the presence of the controlling owner.

4.4. External validity: case of all listed Russian firms over 2000–2017

So far, we have only considered the S&P sample. We now explore the external validity of our baseline results. In doing so, we replace the S&P sample with *all* Russian listed firms. Using the OSIRIS database, we collected information of all Russian listed firms; we also dropped the firms with any missing observations for any regression variable.

Accordingly, we generated a sample of 117 non-financial and non-utility sector firms over 2000–2017, of which 14% were cross-listed.[22] The estimates of Equation (4) reported in Table 8 (see columns 1 and 2) are consistent with the corresponding results for the S&P sample in Table 6. Moreover, we obtained similar results when we considered all 653 Russian listed firms in columns 3 and 4: while firm valuation increases, earnings shares remain unchanged among treated domestic-listed firms after the adoption of the new T&D rules in 2007. This confirms the external validity of our central results.

Table 8. External validity: Performance estimates of all Russian listed firms, 2000–201**7**.

VARIABLES	Non-financial and non-utility listed firms		All listed firms	
	(1)	(2)	(3)	(4)
	Tobin's Q	EBIT share	Tobin's Q	EBIT share
DomesticXTD2007	0.2203**	−0.0581*	0.5368***	−0.0332
	(2.0589)	(1.8742)	(0.150)	(0.031)
Constant	0.504**	−0.1998	1.1947**	−0.7348
	(0.2057)	(1.47)	(0.518)	(0.609)
Other controls	Yes	Yes	Yes	Yes
Sector	Yes	Yes	Yes	Yes
SectorXYear dum.	Yes	Yes	Yes	Yes
No of firms	117	117	653	653
R-squared	0.050	0.064	0.042	0.042

This table shows the D-in-D estimates of *all* (rather than just those included in S&P survey) Russian listed firms over 2000–2017. Column (1) shows the estimates for Tobin's Q and column (2) shows those for EBIT share. We include a dummy for the domestic-listed Russian firms ('Domestic'), dummy for the T&D reform adoption in 2007 (TD2007) and also their interactions considering the sample period 2000–2017. The variable 'Domestic' is a dummy variable – takes the value 1 if the firm is listed only in Russian exchanges and it takes 0 if the firm is listed in both Russian exchange and one/many foreign exchanges (cross-listed). TD2007 is a binary variable that takes a value 1 if year $> = 2007$ (when all sample firms adopted the reform as per S&P survey). Other controls are as in Table 6 and are lagged by one year. We cluster standard errors by firm id; t-statistics are shown in parentheses. level of significance: $*** p < 0.01, ** p < 0.05, * p < 0.1$.

4.5. Mechanisms underlying Hypotheses 2 and 2a

As per Equation (1), the total effect of increased disclosure depends on how it affects reported earnings and firm valuation (via an increase in the valuation multiple).

4.5.1. Effects on reported earnings

The estimates in Table 4 showed that increased disclosure resulted in a drop in reported earnings share among treated firms after the introduction of new disclosure rules; however, there was no further change in earnings shares after all firms complied with the disclosure rules from 2007 onwards (see Table 6). These results were also confirmed in the corresponding firm fixed-effects estimates (see Tables 5 and 7 for earnings quality and firm performance, respectively).

4.5.2. Effects on valuation multiple

To understand the effect of increased disclosure on the valuation multiple, we considered two proxies of valuation multiple: price–earnings ratio and the market-to-book ratio. Appendix Figure A3a shows the non-parametric Epanechnikov kernel fit between the composite T&D adoption index and the price–earnings ratio for domestic-listed firms. The price–earnings ratio had increased until it reached a maximum T&D adoption index of around 0.5, and then it started falling, perhaps reflecting the costs of excessive transparency (i.e. Goldstein and Sapra 2013). Figure A3b shows the monotonically increasing relationship between the T&D composite index and the market-to-book ratio among domestic-listed firms. We take these two pieces of evidence as confirmation of a positive relationship between the T&D adoption index and proxies for valuation multiple, with some limits for excessive disclosure. The FE results shown in Tables 5 and 7 together suggest that the increase in valuation multiple after some firms started disclosing was somewhat muted until 2007,[23] but then became pronounced after 2007 when all firms started disclosing comparable information. The latter can be attributed to a lowering of the processing costs of information by market participants, as everyone started disclosing from 2007 onwards, leading to a more pronounced effect on valuation multiple after 2007.

4.5.3. Effects on cost of capital

An important factor driving the increase in valuation multiple is likely to be a drop in the cost of capital among treated domestic-listed firms, which started disclosing quality and comparable information (e.g. Barth, Konchichki, and Landsman 2013).

Cost of capital is the cost of raising new capital (both debt and equity) to generate income. Following Stewart (1991), we used the concept of economic profit to estimate the weighted average cost of capital (WACC).[24] Economic value added (EVA) is an estimate of a firm's economic profit, or the value created in excess of the required return of the company's shareholders. Accordingly, we defined the EVA of i-th firm in t-th year, as follows:

$$\text{EVA}_{it} = \text{NOPAT}_{it} - \text{WACC} \times \text{TOTAL CAPITAL}_{it-1} \tag{5}$$

where NOPAT is the net operating profit after tax and TOTAL CAPITAL is the book value of debt and equity as a share of total assets.[25] Re-arranging the EVA in Equation (5), we estimate the following regression Equation (6) for NOPAT that also includes a stochastic disturbance term, e_{it}:

$$\text{NOPAT}_{it} = \beta \, \text{EVA}_{it} + \text{WACC} \times \text{TOTAL CAPITAL}_{it-1} + e_{it} \tag{6}$$

We proxy NOPAT by net income (as a share of total assets) and EVA by the log of sales; this is because increase in sales is a key predictor of increasing EVA. Accordingly, we estimated Equation (6), linking NOPAT to EVA and lagged total capital along with sector and also Sector × Year dummies. The latter will account for the sectoral material intensity of technology over time. We took the estimated coefficient of lagged Total Capital as a measure of WACC to provide evidence for the cost of capital after the introduction/adoption of new T&D rules. Table 9 shows the estimates of β and WACC for treated domestic listed firms before/after 2003 introduction as well as the 2007 adoption of the T&D rules.

Table 9. Estimates of cost of capital.

VARIABLES	(1) Domestic 2000–2002 Netincome/ta	(2) Domestic 2003–2007 Netincome/ta	(3) Domestic 2000–2007 Netincome/ta	(4) Domestic 2007–2014 Netincome/ta
Ln(Sales)	0.0142∗∗∗	0.0199∗∗∗	0.0163∗∗	0.0133∗∗
	(0.00486)	(0.00442)	(0.008)	(0.005)
Total capital$_{t-1}$	0.0470∗∗∗	0.0255∗∗∗	0.0439∗∗∗	0.0163∗∗∗
	(0.00365)	(0.00436)	(0.007)	(0.006)
Constant	−0.193∗∗∗	−0.246∗∗∗	−0.1823	−0.1228
	(0.0651)	(0.0596)	(0.110)	(0.095)
Industry dummies	Yes	Yes	Yes	Yes
IndustryXYear dummies	Yes	Yes	Yes	Yes
Firms/clusters	36	55	39	55
R-squared	0.662	0.331	0.369	0.073

This table provides estimates of net operating profit (NOPAT) proxied by net income (as a share of total assets) for treated domestic firms before/after 2003 introduction as well as the 2007 adoption of the T&D rules. The coefficient estimate of lagged total capital is taken to be a measure weighted average cost of capital. Columns (1)–(2) show the estimates before/after the introduction of CG Code in 2003 while those in columns (3)–(4) show the corresponding estimates before/after 2007 adoption. We cluster-standard errors at the firm level; T-statistics are shown in parentheses: ∗∗∗ $p < 0.01$, ∗∗ $p < 0.05$, ∗ $p < 0.1$.

Columns 1 and 2 of Table 9 report the estimates of NOPAT as per Equation (6) for domestic-listed firms before and after the 2003 introduction, while columns 3 and 4 show those before/after 2007 adoption of the T&D rules by all firms. Considering column 1–2 estimates, the estimated coefficient of the lagged Total Capital variable (i.e. WACC) is 0.0255 after 2003 (see Column 2), which is lower than that (0.0470) before 2003, indicating a decline in WACC among the treated domestic-listed firms, on average, after 2003. We found a similar pattern when we considered the estimates before and after the adoption of the T&D rules by all domestic-listed firms in 2007 in columns 3 and 4: the post-2007 WACC is 0.0163, which is significantly less than the pre-reform value of WACC 0.0439 before 2007. Evidently, the drop in the cost of capital was more pronounced after 2007 (than for the post-2003 years) when processing cost of information fell, as all firms started disclosing comparable information. Therefore, we can attribute the increase in valuation multiple to the observed drop in the cost of capital among treated firms in our sample after the introduction/adoption of new T&D rules.

4.5.4. Mediation analysis

Finally, we used a mediation analysis to establish the association among earnings quality, reported earnings share, and therefore, firm valuation proxied by Tobin's Q.

Columns 1 and 2 of Appendix 1 Table A6 show the estimates of reported EBIT share. Column 1 indicates that higher accruals significantly increase the EBIT share; the estimated coefficient of earnings smoothness is negative in Column 2 but remains insignificant. In both columns, however, the estimated coefficient of Treated∗TD2003 is negative and statistically significant, as in Table 6, indicating that EBIT share dropped among the treated listed firms as they started disclosing from 2003 onwards. Columns 3 and 4 examine the association between EBIT share and firm valuation using the 2000–2007 and 2000–2014 samples. A higher EBIT share leads to a higher Tobin's Q using the 2000–2007 sample in Column 3. However, increased disclosure still has no significant effect on Tobin's Q among treated firms, as the interaction term remains statistically insignificant. One interpretation is that the fall in the EBIT share is balanced by increases in valuation multiples over 2000–2007. Finally, Column 4 shows the effect of EBIT share on Tobin's Q using the 2000–2014 sample.

We found the EBIT share variable to be weakly positively related to Tobin's Q and, unlike in Column 3, the estimated coefficient of the interaction term is positive and statistically significant for Tobin's Q after all firms had complied with some new T&D rules by 2007. This mediation analysis, therefore, establishes the link between accrual quality, EBIT share and Tobin's Q in our sample, thus validating the mechanism (as per Equation 1) used to explain how increased disclosure may impact firm valuation.

Table 10. Effect of 2002 introduction of T&D rules on performance among cross-listed firms, 2000–2007.

	2000–2007		
	EBIT share	Tobin's Q	Years since adoption
TD2003	0.0541	−2.2192	–
	(1.22)	(1.00)	
Log(total assets)	0.0265	−0.8226∗∗	0.4144∗∗∗
	(1.33)	(3.01)	(4.78)
Intangibility	−0.0012	0.0416∗∗	−0.0179∗∗
	(1.07)	(2.61)	(2.79)
Cross-listed firms			0.9920∗∗
			(2.64)
Intercept	−0.2643	16.4201∗∗∗	−4.7638∗∗
	(0.98)	(3.87)	(3.14)
Sector dummies	Yes	Yes	Yes
SectorXYear dummies	Yes	Yes	Yes
R^2	0.17	0.18	0.41
Firms	13	11	70

This table shows the OLS estimates of firm performance among cross-listed firms only. Columns (1)–(2) of the table shows the effect of the adoption of the reform on EBIT share and Tobin's Q among cross-listed firms. TD2003 is a binary variable that takes a value 1 if year $> = 2003$ and 0 otherwise. Column (3) shows the estimates for the number of years since a firm adopted the 2002 T&D rules. All control variables are lagged by one year. We use cluster-robust standard errors at the firm level. T-statistics are shown in parentheses: $\ast p < 0.1; \ast\ast p < 0.05; \ast\ast\ast p < 0.01$.

4.6. Hypothesis 3: impact on cross-listed firms

To test Hypothesis 3, we examined if the cross-listed firms in our sample had experienced any change in performance after the T&D reform. The estimates for cross-listed firms are reported in Table 10: Column 1 for EBIT share and Column 2 for Tobin's Q.

The estimated coefficient of the TD2003 dummy is statistically insignificant in both columns. This is consistent with our expectation that the T&D reform did not significantly affect either the EBIT share or market valuation of cross-listed firms. This result contrasts with that for domestic-listed firms shown in Tables 6 and 7, thus supporting Hypothesis 3.

We argue that this is because the pre-2003 cross-listed firms were already better governed, as they were regulated by more stringent rules on foreign stock exchanges. This is validated by the evidence that the cross-listed (relative to domestic-listed) firms were more likely to be early adopters of the reform. Column 3 of Table 10 shows the estimates of the number of years since the adoption of the T&D rules as a function of cross-listed dummy among other firm characteristics used in our baseline regression. Ceteris paribus, the estimated coefficient of the cross-listed dummy is positive and statistically significant, further suggesting that cross-listed firms were more likely to adopt the 2002 T&D rules earlier than the domestic-listed ones. We attribute the latter to them being listed on foreign exchanges with more stringent disclosure requirements.

5. Conclusions

Transparency is a key driver of corporate trust, although it is also an area in which companies commonly underperform, especially those in emerging economies. Existing literature, primarily drawn from the US and other OECD countries, tends to highlight the immediate benefits of increased disclosure. Our point of departure from this literature is to focus on Russia, an important emerging economy with weak institutions. This is important first because the reporting standards are high and have been stable over an extended period in the US (Gompers, Ishii, and Metrick 2003); therefore, the likelihood of deriving any incremental benefit from new disclosure reform is slim. Second, there are huge challenges in the implementation of a reform in emerging economies, so it is important to understand the *process of compliance*, distinguishing the impact of the *introduction* of a reform from that of its *compliance*. Finally, using the exogenous variation in disclosure after the 2002 introduction of

the Russian CG Code as a natural experiment, we were able to estimate the *causal* impact of the introduction as well as that of the adoption/compliance of new T&D rules, and we are the first to do so.

Despite Russia being an unpromising jurisdiction, we documented that Russian domestic-listed firms had increasingly complied with the 2002 T&D rules (although not fully), presumably reflecting their belief that non-compliance was costly in an economy with significant constraints on bank lending (Laeven 2001). The immediate effect of increased disclosure was a drop in previously inflated reported earnings share and increased earnings quality. However, investors' response to firm valuation was muted immediately after the introduction of new disclosure rules and became pronounced only after *all* treated domestic-listed firms started disclosing comparable information that helped lower the processing costs of disclosed information. Finally, we showed that the cross-listed Russian firms did not experience any significant impact of the reform, as they were already disclosing, being guided by the more stringent disclosure requirements of foreign stock exchanges.

One possible limitation of our analysis is that the baseline sample size is small because it relies on the S&P survey of compliance with the new T&D rule of the top 70 Russian listed firms. However, we also tested the robustness of our baseline estimates by considering the sample of *all* listed Russian firms and establishing the external validity of our key results.

Russia is surely not an isolated case. Investors are encountering similar uncertainty and fears in other emerging economies, including Indonesia, Korea, Brazil, Mexico, Argentina, Turkey and India, which together have been contributing to more than 80% of global growth since the 2008 financial crisis (Lagarde 2016).[26] Since US-style corporate checks and balances do not work in most of these countries, our results may bear broader generalisability for Western investment in these other emerging markets. Since we know very little about compliance with T&D rules in these other emerging economies, we hope our study will instigate similar studies for other emerging economies in the future.

Notes

1. However, the example of China since the 1980s suggests that a determined leadership can implement effective governance changes when the pressures of long-term policy goals are reinforced through integration with competitive international markets (Young et al. 2008).
2. T&D data covers disclosure of ownership structure, shareholder rights, financial and operational performance, and board and management structure and processes.
3. We argue that this insignificant firm value effect is not because the treatment was anticipated by the market. Firms gradually adopted the new disclosure rules over 2003–2007, depending on their individual cost–benefit calculations. Instead, we attribute it to the processing cost of information until everyone complied (see Section 4).
4. We conducted various robustness tests of our baseline estimates – our central results remain unchanged even if we do the following: (i) consider smaller firms; (ii) omit the financial crisis years 2008–2009; (iii) include control for presence of controlling owners; (iv) include controls for sample firms cross-listing in specific foreign markets; (v) consider firm fixed-effects estimates.
5. Since 1996, the FCSM won the authority to impose penalties for violations in information disclosure and ban issuers who do not disclose the required information from public trading of securities (Sprenger 2000). Vasiliyev (2000) also lists several law enforcement activities by the FCSM for non-compliance with CG laws, thus adding to the cost of non-compliance.
6. Rule 144A implemented in 1990 permitted firms to raise capital from 'qualified institutional buyers' without requiring registration of the securities and elaborate compliance with the US GAAP.
7. This was sponsored by the Moscow Stock Exchange, e.g. http://cbonds.com/news/item/301945.
8. The S&P database is based on information taken from three major public information sources: firm's annual reports, web-based company disclosures and public regulatory reports.
9. Given a high degree of correlation among different components of the T&D reform, we are unable to include these three scores individually in our analysis.
10. While Tobin's Q-theory highlighted the sensitivity of investment to Tobin's Q, in the absence of a better alternative, Tobin's Q is the most common measure of firms' market performance. We further find that it is significantly correlated with both market-to-book ratio and price–earnings ratio, irrespective of whether the debt ratio is below or above its 5-percentile value 0.13 (there are no zero debt firms in our sample).
11. We use the absolute value of discretionary accruals because there is no a priori basis to predict any specific direction for earnings management, positive or negative.
12. Angrist and Pischke (2009, Section 8.2.3) argued that for commonly encountered sample sizes – 50 or more – the cluster robust standard errors perform well. Although our sample is relatively small, we have over 50 firms defining the clusters in our estimation samples; hence, our estimates, t-statistics and confidence intervals remain acceptable.

13. Appendix Table A1 reports regressions where the two earnings quality measures are regressed on Domestic, year dummies and their interactions for testing parallel trends assumption. Columns 1 and 2 show these estimates for 2000–2007. The coefficients of interest are those of the interaction terms, especially in the pre-2003 years. We found that the interaction terms (Domestic∗Year$_t$), $t = 2001$–2002 were statistically insignificant in both columns (year 2000 is the reference group). Thus, the average earnings quality of treated domestic firms was not significantly different from that of control firms in years prior to 2003, thus validating the parallel trends assumption in our sample.

14. Columns 3 and 4 of Appendix Table A1 report regressions where the two performance measures are regressed on Domestic, year dummies and their interactions for 2000–2007. The coefficients of interest are those of the interaction terms in the pre-2003 years. We find that the interaction terms (Domestic∗Year$_t$), $t = 2001$, 2002 ($t = 2000$ is used as reference group) are statistically insignificant for both performance indices. The average performance of treated domestic firms was thus not significantly different from that of control firms in years prior to 2003. We take this as a confirmation of the parallel trends assumption in our sample.

15. Given that there are a number of missing values for firm age and also because the firm age variable is not statistically significant in any specification, we drop the age variable, which increases sample size from 288 to 349 so that the number of firms included in the estimation sample increases to 66.

16. This was possibly because firm financial statements were not used for tax purposes (Goncharov and Zimmermann 2005), facilitated by the change in tax regime in 2001. This allowed senior executives to inflate firm earnings ratio (e.g. Healey and Wahlen 1999).

17. The interpretation of these performance estimates is contingent on whether total assets substantially changed in the post-reform years. Appendix 1 Table A2 reports comparisons of total assets, growth of total assets and log (total assets) before and after the reforms. It confirms that total assets did not change. This is further confirmed when we regress log of total assets on TD2003 and TD2004, as reported in Appendix 1 Table A3. Consequently, we attribute the observed fall in the EBIT share ratio to a fall in the EBIT.

18. We replace the TD2003 dummy variable by TD2007 that takes a value 1 for 2007–2014 and zero otherwise. In this case, however, we drop observations for the financial crisis years 2008–2009, which may have generated volatility in outcomes.

19. This increased from 24% since 2004 because of increases in minority stakes up to a controlling level (e.g. Gazprom) and acquisitions of formerly private companies (e.g. Yukos, Sibneft and VSMPO-Avisma). These figures are based on estimates by Troika Dialog, the oldest and largest investment bank in Russia. State control in key sectors in 2007 measured in market capitalisation are as follows: banking (64%), oil and gas (47%), and utilities (37%).

20. In 2014, the Russian government forced billionaire Vladimir Evtushenkov to hand over OAO Bashneft, while, in 2015, they were eyeing the OAO Surgutneftegas.

21. For example, in 2003, the Russian government dismantled Yukos and merged it with Sibneft, which is controlled by Roman Abramovich, creating the worldâĂŽs fourth largest oil firm. However, within two years, the Kremlin policy changed. Through a series of dubious legal mechanisms, it dismantled the merger and sold its largest part to Rosneft, the state oil company run by Putin's allies. A similar problem happened with the BP-TNK merger between 2003 and 2004.

22. Note that we do not have compliance (with 2002 T&D rules) data for all Russian firms; we only have it for the S&P sample.

23. This can be attributed to an absence or weak form of efficiency of Russian firms in the pre-2007 years (Said and Harper 2015).

24. We do not follow the conventional approach of identifying a firm's WACC based on estimating the costs of the individual components of the firm's sources of financing. This is because it is difficult to identify the correct weights of the capital structure components, as the market values of many debt securities (e.g. bank loans, privately placed debt) might be unknown.

25. Damodaran (1996) described how this can be viewed as an equilibrium relationship for a value maximising firm that has established an optimal capital structure and generated sufficient perpetual, non-growing cash flows to satisfy investors' required returns on the firm's securities.

26. https://www.imf.org/en/News/Articles/2015/09/28/04/53/sp020416.

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